LEGEND

	PIPING				DUCT			CONTROLS_AND_INST	RUMENTATION	
SYMBOL	DESCRIPTION	ABBREV.	SYMBOL	SINGLE_LINE	DESCRIPTION	ABBREV.	SYMBOL	SINGLE_LINE	DESCRIPTION	ABBREV.
	REFRIGERANT_DISCHARGE	RD_	18x12	\$ 18x12	DUCT_SIZE,_FIRST_FIGURE_IS_SIDE_DOWN Ø =ROUND, ← =FLAT OVAL			0	THERMOSTAT_(T)	
	REFRIGERANT_SUCTION_	RS_	₹ }	\ 	FLEXIBLE_CONNECTION_(FC)			0 -	THERMOSTAT_(T), HARD WIRED TO EQUIPMENT	İ
с	CONDENSATE_DRAIN_LINE	C_	18x12	\boxtimes	DUCT_SECTION,POSITIVE_PRESSURE FIRST_FIGURE_IS_TOP_SIDE					-
	FITTINGS		18x12		DUCT_SECTION,NEGATIVE_PRESSURE FIRST_FIGURE_IS_TOP_SIDE			<u></u>	VERTICAL COMBINATION SMOKE/FIRE_DAMPER_AT_WALL	SD/FD
	TEE_OUTLET_UP	TUP_	18x12	18x12	ARROW POINTS TO DIMENSION OF FIRST FIGURE (18)		→		HORIZONTAL COMBINATION SMOKE/FIRE_DAMPER_IN_RISER	SD/FD
	TEE_OUTLET_DOWN	TDN		\boxtimes —	DUCT SECTION, POSITIVE PRESSURE AIR DUCT TURNING UP			I A	VERTICAL_SMOKE_DAMPER_AT_WALL	SD
	LATERAL	LA_		\boxtimes	POSITIVE PRESSURE AIR DUCT TURNING DOWN			<u></u>	VERTICAL_FIRE_DAMPER_AT_WALL	FD
	TEE	Т_					→		HORIZONTAL SMOKE DAMPER IN RISER	SD
<u>_</u>	ELBOW_TURNED_DOWN	DN_	PLAN_	R/EL	DUCT TURNING UP WITH RADIUS ELBOW		•	 →	HORIZONTAL FIRE DAMPER IN RISER	FD
o	ELBOW_TURNED_UP						BDD	\$ BDD	BACKDRAFT_DAMPER	BDD
<u></u>	END_CAP	EC	SECTION					} 	AUTOMATIC_CONTROL_DAMPER, PNEUMATIC_OR_ELECTRIC	
— —	BLIND_FLANGE	BF			EXPANSION OR CONTRACTION,			S L MVD S	MANUAL_VOLUME_DAMPER_(MVD)	MVD
				, , ,	SINGLE SIDED OR TWO SIDED		AD AD	5 — AD →	ACCESS_DOORS,_VERTICAL OR_HORIZONTAL	AD
			RECT.	₩	TRANSITION FROM RECT. TO ROUND			DIFFUSER	S_AND_GRILLES	
				Ļ	SQUARE_ELBOW_WITH TURNING_VANES_(TV)		→ 14x12 700	\$ 14x12 700	SIDEWALL_GRILLE_,_REGISTER REVERSE_ARROW_FOR_RETURN	
					RADIUS ELBOW		OED OED)——— OED	OPEN_END_DUCT_WITH_!!_x_!!WIRE MESH SCREEN	OED
			RECT BRANCH 0.25xDUCT WIDTH						CEILING_GRILLE_,_REGISTER_ FOR_RETURN_OR_EXHAUST_AIR;_SEE_ "_DIFFUSER_&_GRILLE_SCHEDULE_"_	
			45° RECT MAIN						CEILING_SUPPLY_DIFFUSER RECTANGULAR_OR_SQUARE;_SEE "_DIFFUSER_AND_GRILLE_SCHEDULE_"	
			ROUND OR OVAL BRANCH CONICAL SPIN-IN		90° TAKE-OFF WITH 45° TAB COLLAR (OR BOOT FITTING), CONICAL SPIN-IN			DIF	FUSER KEY:	
			RECT MAIN J		ÖR CONICAL FITTING			QUANTITY (CFM) RK" "REFERENCE" OR "ID" E DIMENSION IN INCHES		
			ROUND OR OVAL BRANCH CONICAL FITTING	J				08 NEC	CK DIMENSION IN INCHES PICAL OF 2	
			ROUND OR OVAL MAIN	,						
				<u>, </u>	90° TAKE-OFF			*	DISCONNECTION FROM EXISTING	
				$\frac{R}{I}$				*	CONNECTION TO EXISTING	
			PLAN SMOOTH RADIUS))	CHANGE IN ELEVATION - (RISE OR DROP) WHERE					
	ELBOWS 45° MAX		CHANGE IN ELEVATION - (RISE OR DROP) WHERE R=RISE AND D=DROP, ARROW INDICATES THE DIRECTION OF AIR FLOW.							
			SECTION							
			SMOOTH RADIUS ELBOWS	R D	CHANGE IN ELEVATION-					
			45° MAX	2++++	(OFFSET OVER OBSTRUCTION)- WHERE ARROW INDICATES THE DIRECTON OF AIR FLOW					

GENERAL NOTES - APPLY TO ALL "M" DRAWINGS

- 1. DO NOT LOCATE VALVES, DAMPERS, ACTUATORS, CONTROL COMPONENTS, ANY EQUIPMENT WITH MOVING PARTS OR ANY EQUIPMENT NEEDING ACCESS OR REGULAR MAINTENANCE ABOVE INACCESSIBLE CEILINGS.
- 2. COORDINATE MECHANICAL AND ELECTRICAL SUCH THAT PIPING, DUCTWORK OR EQUIPMENT ARE NOT LOCATED OVER ANY ELECTRICAL EQUIPMENT.
- 3. LOCATE ALL PIPING AND DUCTWORK ABOVE THE CEILING UNLESS OTHERWISE NOTED.
- DRAWINGS ARE DIAGRAMATIC. CONTRACTOR SHALL COORDINATE EXACT LOCATIONS AND ELEVATIONS OF ALL DUCTWORK, PIPING, LIGHTS, CONDUIT, CABLETRAYS, ETC., PRIOR TO INSTALLATION. OFFSET DUCT WHERE REQUIRED TO AVOID INTERFERENCE.
- 5. TO ALLOW ACCESS AND MAINTENANCE, DO NOT LOCATE DUCT, PIPING AND EQUIPMENT MORE THAN 3 FEET ABOVE CEILING.

DUCTWORK NOTES:

- PROVIDE MANUAL BALANCING DAMPER AT TAKEOFF FROM MAIN DUCT TO EACH DIFFUSER OR GRILLE. WHERE DIFFUSER IS AT END OF MAIN, PROVIDE MANUAL BALANCING DAMPER IN ROUND DUCT AFTER RECTANGULAR TO ROUND TRANSITION. DO NOT PROVIDE BALANCING DAMPER IN DIFFUSER OR GRILLE NECK UNLESS NOTED ON DRAWINGS.
- 2. DO NOT PROVIDE DAMPERS IN MEDIUM PRESSURE DUCT (UPSTREAM OF VAV'S) UNLESS NOTED OTHERWISE.
- 3. PROVIDE DUCT OFFSETS OVER OR UNDER PIPING OR OBSTRUCTIONS AS REQUIRED. WHERE DUCT OFFSETS ARE REQUIRED, USE 45° SMOOTH RADIUS ELBOWS.
- 4. PROVIDE CONICAL FITTINGS FOR ALL DUCT TAKEOFFS FROM MAIN DUCT OR BRANCH DUCT TO TERMINAL UNITS.
- 5. FOR RECTANGULAR DUCT UPSTREAM OF VAV'S, ALL TAKEOFFS FROM MAIN SHALL BE 45 TAB COLLARS (OR BOOT).
- 6. DUCT RUNOUTS TO DIFFUSERS OR GRILLES ARE SAME SIZE AS NECK, UNLESS NOTED OTHERWISE (U.N.O.).
- 7. NOT USED.

ARE INSTALLED.

AIR HANDLING UNIT.

- 8. FIBERGLASS DUCT IS NOT PERMISSIBLE.
- 9. ALL SMOKE DAMPERS ARE COMBINATION FIRE AND SMOKE DAMPERS.
- 10. ALL DUCTS WITH RECTANGULAR ELBOWS SHALL HAVE TURNING
- 11. WHERE MANUAL VOLUME DAMPERS ARE LOCATED ABOVE INACCES-SIBLE CEILINGS, BALANCING SHALL BE DONE BEFORE CEILINGS
- 12. RUNOUTS TO TU'S SHALL BE SAME SIZE AS UNIT CONNECTION UNLESS RUNOUT LENGTH EXCEEDS 6'-0", THEN RUNOUT SHALL BE 2" LARGER DIAMETER THAN INLET CONNECTION.
- 13. ALL DUCT DIMENSIONS ARE FREE AREA DIMENSIONS AND DO NOT INCLUDE ALLOWANCES FOR DUCT LINER THICKNESS.
- 14. PROVIDE ACCESS DOORS FOR ALL OUTSIDE AIR PLENUMS AT EACH
- 15. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS FOR
- EXACT LOUVER LOCATIONS AND SIZES.
- 16. DO NOT LOCATE TERMINAL UNITS (TU) ABOVE RECESSED CAN
- LIGHTS OR DIRECTLY BELOW BEAMS.
- 17. ROUTE DUCTWORK BETWEEN BEAMS TIGHT TO BOTTOM OF STRUCTURE. OFFSET BELOW BEAMS WHERE NECESSARY.
- 18. LOCATE TERMINAL UNITS TO ALLOW 3'-6" MINIMUM SERVICE CLEARANCE.
- 19. PROVIDE FLEX DUCT CONNECTORS AT ALL FAN DUCT CONNECTIONS.

PIPING NOTES:

 CONDENSATE PIPING IS GRAVITY FLOW, UNLESS NOTED OTHERWISE. PROVIDE CLEANOUT AT EVERY CHANGE IN DIRECTION GREATER THAN 45 DEGREES FOR BOTH PUMPED AND GRAVITY FLOW CONDENSATE PIPING.



CITY OF ATLANTA, GEORGIA

Hartsfield-Jackson Atlanta International Airport



 HEERY INTERNATIONAL, INC.
 MATRIX 3D

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D WITTSCHIEBE HAND ARCHITECT 15 SIMPSON STREET ATLANTA, GA 30308 PHONE: 404.688.2200 FAX: 404.688.2400

PHASE 3
VERTICAL
TRANSPORTATION

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

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NO.	DATE	BY	REVISION	
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HVAC LEGEND AND GENERAL NOTES

WBS NUMBER: H.03.90.202	<i>DRAWN BY:</i> J. GILLESPIE
FC NUMBER: 6006007929 CONSULTANT PROJECT NUMBER: 07306.16	DESIGNED BY: J. GILLESPIE CHECKED BY: R. ANWAR
REFERENCE NUMBER	APPROVED BY:
	J. GILLESPIE
	J. GILLESPIE DATE:
	DATE:
	DATE: 06.11.2014

						FAN SC	HEDULE							
REFERENCE	VF-TC1	VF-TC6	VF-TC7	VF-TC9	VF-TC12	VF-T1	VF-T4	VF-T10	VF-T11	VF-T12	VF-T13	VF-T14	VF-A1	VF-A4
LOCATION	TCON 1	TCON 6	TCON 7	TCON 9	TCON12	T1	T4	T10	T11	T12	T13	T14	TERMINAL A1	TERMINAL A4
	MACH RM													
SERVICE	VENTILATION													
AREA SERVED	ELEV. MACH.													
	ROOM													
DRAWING	4/MT4.0.3	2/MT4.0.3	4/MT4.0.2	2/MT4.0.2	4/MT4.2.1	2/MT4.0.4	4/MT4.0.4	2/MT4.0.5	6/MT4.0.1	4/MT4.0.5	4/MT4.0.1	2/MT4.0.1	2/MA4.0.1	4/MA4.1.1
TYPE	WALL MOUNT,	WALL MOUNT,	WALL MOUNT,	WALL MOUNT,	ROOF MOUNT,	WALL MOUNT,	ROOF MOUNT,							
	PROPELLAR	PROPELLAR	PROPELLAR	PROPELLAR	CENTRIFUGAL	PROPELLAR	PROPELLAR	PR0PELLAR	PROPELLAR	PROPELLAR	PROPELLAR	PR0PELLAR	PROPELLAR	CENTRIFUGAL
DRIVE TYPE	DIRECT													
AIRFLOW, CFM	1200	1200	1200	1200	4000	1200	1200	1200	1200	1200	1200	1200	1200	1200
MIN. FAN STATIC PRESSURE,	0.3	0.3	0.3	0.3	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.25
INCHES W.C.	0.5	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.25
MIN. WHEEL/PROPELLER SIZE,	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FAN RPM	1750	1750	1750	1750	1505	1750	1750	1750	1750	1750	1750	1750	1750	1560
MOTOR BRAKE HP	0.16	0.16	0.16	0.16	1.3	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.20
MOTOR SIZE (HP)	1/4	1/4	1/4	1/4	2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
MOTOR RPM	1750	1750	1750	1750	1505	1750	1750	1750	1750	1750	1750	1750	1750	1560
ELECTRICAL SERVICE	120V / 1 Ø / 60 HZ	460V / 3 Ø / 60 HZ	120V / 1 Ø / 60 H											
BASIS FOR DESIGN (GREENHECK)	SE1-12-432-A	SE1-12-432-A	SE1-12-432-A	SE1-12-432-A	G-163-VG	SE1-12-432-A	G-103-VG							
NOTES	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 5, 6	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 4

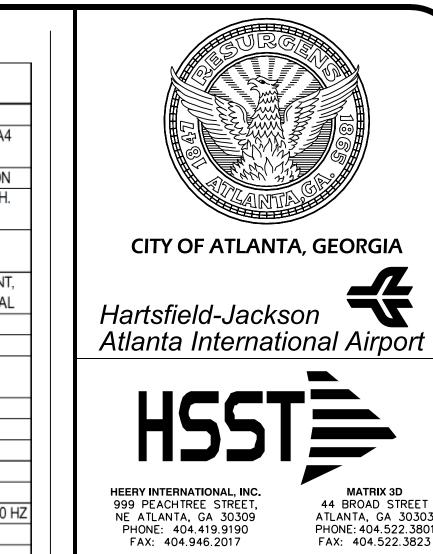
						E4N 00								
						FAN SC	HEDULE							
REFERENCE	VF-A5	VF-A6	VF-A7	VF-A8	VF-A10	VF-B3	VF-B4	VF-B7	VF-B8	VF-C5	VF-C6	VF-D1	VF-D2	VF-D3
LOCATION	TERMINAL A5	TERMINAL A6	TERMINAL A7	TERMINAL A8	TERMINAL A10	TERMINAL B3	TERMINAL B4	TERMINAL B7	TERMINAL B8	TERMINAL C5	TERMINAL C6	TERMINAL D1	TERMINAL D2	TERMINAL D3
	MACH RM													
SERVICE	VENTILATION													
AREA SERVED	ELEV. MACH.													
DRAWING	2/MA4.1.1	2/MA4.0.3	2/MA4.0.3	2/MA4.0.3	4/MA4.0.1	4/MB4.1.1	4/MB4.0.2	2/MB4.0.2	2/MB4.1.1	4/MC4.0.1	2/MC4.0.1	4/MD4.2.1	2/MD4.2.1	2/MD4.0.1
TYPE	ROOF MOUNT,	WALL MOUNT,	WALL MOUNT,	WALL MOUNT,	WALL MOUNT,	ROOF MOUNT,	WALL MOUNT,	WALL MOUNT,	ROOF MOUNT,	WALL MOUNT,	WALL MOUNT,	ROOF MOUNT,	ROOF MOUNT,	WALL MOUNT,
DRIVE TYPE	DIRECT													
AIRFLOW, CFM	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	4000	4000	1200
MIN. FAN STATIC PRESSURE,	0.25	0.3	0.3	0.3	0.3	0.25	0.3	0.3	0.25	0.3	0.3	0.5	0.5	0.3
MIN. WHEEL/PROPELLER SIZE,	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FAN RPM	1560	1750	1750	1750	1750	1560	1750	1750	1560	1750	1750	1505	1505	1750
MOTOR BRAKE HP	0.20	0.16	0.16	0.16	0.16	0.20	0.16	0.16	0.20	0.16	0.16	1.3	1.3	0.16
MOTOR SIZE (HP)	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	2	2	1/4
MOTOR RPM	1560	1750	1750	1750	1750	1560	1750	1750	1560	1750	1750	1505	1505	1750
ELECTRICAL SERVICE	120V / 1 Ø / 60 HZ	460V / 3 Ø / 60 HZ	460V / 3 Æ / 60 HZ	120V / 1 Ø / 60 HZ										
BASIS FOR DESIGN (GREENHECK)	G-103-VG	SE1-12-432-A	SE1-12-432-A	SE1-12-432-A	SE1-12-432-A	G-103-VG	SE1-12-432-A	SE1-12-432-A	G-103-VG	SE1-12-432-A	SE1-12-432-A	G-163-VG	G-163-VG	SE1-12-432-A
NOTES	1, 2, 5	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 4	1, 2, 3	1, 2, 3	1, 2, 5	1, 2, 3	1, 2, 3	1, 2, 5,	1, 2, 5	1, 2, 3

ACCESSORIES:

- PROVIDE NEMA 1 ELECTRICAL DISCONNECT.
- 2. COORDINATE INSTALLATION WITH DDC CONTROLS INTEGRATION AND ELECTRICAL DRAWINGS
- 3. PROVIDE OSHA GUARD, WALL COLLAR, AND OUTLET GRAVITY DAMPER.
- 4. PROVIDE ROOF CURB AND INLET GRAVITY DAMPER.
- 5. PROVIDE ROOF CURB ADAPTER AND INLET GRAVITY DAMPER.
- PROVIDE INTEGRAL SPEED CONTROLLER MOUNTED ON MOTOR.

			AID TE	RMINAI	LIMIT	CHEDI					
REFERENCE	TU-T1	TU-T4	TU-T11	TU-T13	TU-TC7	TU-TC9	TU-TC1	TU-TC6	TU-A1	TU-B3	TU-C6
LOCATION	T1	T4	T11	T13	TCON7	TCON9	TCON9	TCON9	TERMINAL A1	TERMINAL B3	TERMINAL C6
	MACH RM	MACH RM	MACH RM								
DRAWING	2/MT4.0.4	4/MT4.0.4	6/MT4.0.1	4/MT4.0.1	4/MT4.0.2	2/MT4.0.2	2/MT4.0.3	1/MT4.0.3	4/MA4.0.1	4/MB4.1.1	2/MC4.0.1
SERVICE	VAV	VAV	VAV								
ELECTRIC DUCT HEATER KW	N/A	N/A	N/A								
PRIMARY AIR VALVE											
MIN. BOX INLET DIAMETER,	6	6	6	6	6	6	6	6	6	6	6
INCHES											
PRIMARY AIRFLOW,	300	300	200	200	450	450	350	350	350	300	200
MAXIMUM COOLING, CFM											
PRIMARY AIRFLOW, MINIMUM	0	0	0	0	0	0	0	0	0	0	0
COOLING, CFM											
BASIS FOR DESIGN MANUFACTURER	DESV	DESV	DESV								
(TITUS):											
NOTES	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3

- 1. COORDINATE TERMINAL UNIT CONTROL PANEL WITH FLOOR PLANS ALONG WITH REQUIRED CLEARANCES FOR INSTALLATION.
- 2. INTEGRATE UNIT CONTROLS WITH EXISTING BUILDING AUTOMATION SYSTEM. REFER TO CONTROL DIAGRAMS FOR MORE REQUIREMENTS.
- 3. COORDINATE INSTALLATION OF CONTROL POWER FROM NEW CONTROL PANEL PER FLOOR PLANS.



PHASE 3 VERTICAL TRANSPORTATION

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HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

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NO.	DATE	BY	REVISION	

MECHANICAL SCHEDULES

WBS NUMBER: H.03.90.202	<i>DRAWN BY:</i> J. GILLESPIE
FC NUMBER: 6006007929	<i>DESIGNED BY:</i> J. GILLESPIE
CONSULTANT PROJECT NUMBER:	CHECKED BY:
07306.16	R. ANWAR
REFERENCE NUMBER	<i>APPROVED BY:</i> J. GILLESPIE
	DATE:
	06.11.2014
	SCALE:
	NONE

			DI	UCTLES	S SPLIT	SYSTEM	SCHED	ULE					
REFERENCE	DSEU-A4 /	DSEU-A5 /	DSEU-A6 /	DSEU-A7 /	DSEU-A8 /	DSEU-A10 /	DSEU-B2 /	DSEU-B4 /	DSEU-B7 /	DSEU-B8 /	DSEU-C4 /	DSEU-C5 /	DSEU-D3 /
	DSCU-A4	DSCU-A5	DSCU-A6	DSCU-A7	DSCU-A8	DSCU-A10	DSCU-B2	DSCU-B4	DSCU-B7	DSCU-B8	DSCU-C4	DSCU-C5	DSCU-D3
LOCATION	TERMINAL A4	TERMINAL A5	TERMINAL A6	TERMINAL A7	TERMINAL A8	TERMINAL A10	TERMINAL B2	TERMINAL B4	TERMINAL B7	TERMINAL B8	TERMINAL C4	TERMINAL C5	TERMINAL D3
	MACH RM												
AREA SERVED	ELEV. MACH.												
	ROOM												
SUPPLY AIRFLOW, CFM	700	700	700	700	700	700	700	700	700	700	700	700	700
ELECTRICAL SERVICE (VOLTS/PHASE)	208V/1 PHASE												
ENTERING AIR TEMPERATURE, DEGREES F DB	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
ENTERING AIR TEMPERATURE, DEGREES F WB	67.0	67.0	67.0	67.0	67.0	67.0	67.0	67.0	67.0	67.0	67.0	67.0	67.0
TOTAL COOLING, MBH	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
SENSIBLE COOLING, MBH	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
HEAT CAPACITY (KW)	N/A												
SEER	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
CONDENSING UNIT MODEL NUMBER (MITSUBISHI)	PUY-A24NHA												
EVAPORATOR MODEL NUMBER (MITSUBISHI)	PKA-A24HA												
NOTES	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2

- 1. CONTRACTOR TO PROVIDE MANUFACTURER'S PROGRAMMABLE, WIRED TYPE THERMOSTAT AND REFRIGERANT LINE SET.
- REFER TO ELECTRICAL DRAWINGS FOR WIRING INSTRUCTIONS AND WIRING ACCESSORIES.

UNIT HEATER SCHEDULE (208V)										
REFERENCE	UH-B4									
LOCATION	TERMINAL B4									
	ELEV. MACH. ROOM									
TYPE	SUSPENDED,									
	FORCED AIR									
CAPACITY (KW)	3.0									
AIRFLOW, CFM	350									
AIRFLOW TEMPERATURE	27.0 DEG F									
RISE (°F)										
ELECTRICAL SERVICE	208V / 1 Ø / 60 HZ									
(VOLTS/PHASE)										
BASIS FOR DESIGN	MUH03-81									
(QMARK)										
NOTES	A, B, C									

ACCESSORIES:

- A. PROVIDE DRY CONTACTS AND COORDINATE WITH DCC CONTROLS.
- B. PROVIDE NEMA 1 DISCONNECT.
- C. COORDINATE WITH ELECTRICAL DRAWINGS.

	UNIT HEATER SCHEDULE (277V)																		
REFERENCE	UH-A1	UH-A4	UH-A5	UH-A6	UH-A7	UH-A8	UH-A10	UH-B7	UH-B8	UH-C5	UH-D1	UH-D2	UH-D3	UH-TC6	UH-TC7	UH-TC9	UH-TC12	UH-T10	UH-T12
LOCATION	A1 ELEV.	A4 ELEV.	A5 ELEV.	A6 ELEV.	A7 ELEV.	A8 ELEV.	A10 ELEV.	B7 ELEV.	B8 ELEV.	C5 ELEV.	D1 ELEV.	D2 ELEV.	D3 ELEV.	TC6 ELEV.	TC7 ELEV.	TC9 ELEV.	TC12 ELEV.	T10 ELEV.	T12 ELEV.
	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM	MACH. ROOM
TYPE	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,	SUSPENDED,
	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR	FORCED AIR
CAPACITY (KW)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
AIRFLOW, CFM	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350
AIRFLOW TEMPERATURE	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F	27.0 DEG F
RISE (°F)																			
ELECTRICAL SERVICE	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	277V / 1 Ø /	208V / 1 Ø /
(VOLTS/PHASE)	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ	60 HZ
BASIS FOR DESIGN	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-71	MUH03-81
(QMARK)																			
NOTES	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C

ACCESSORIES:

- A. PROVIDE DRY CONTACTS AND COORDINATE WITH DCC CONTROLS.
- B. PROVIDE NEMA 1 DISCONNECT.
- C. COORDINATE WITH ELECTRICAL DRAWINGS.

ROOM AIR CONDITIO	NER SCH	IEDULE
REFERENCE	RAC-T10	RAC-T12
LOCATION	TERMINAL TC10	TERMINAL TC12
SERVICE	ELEV. MACH.	ELEV. MACH.
	ROOM	ROOM
SUPPLY AIRFLOW, CFM	230	230
ENTERING AIR TEMPERATURE, DEGREES F DB	80.0	80.0
ENTERING AIR TEMPERATURE, DEGREES F WB	67.0	67.0
TOTAL COOLING, MBH (ALL COILS SUMMED)	11.7	11.7
EER	9.0	9.0
SERVICE VOLTAGE	208V / 1 PHASE	208V / 1 PHASE
BASIS OF DESIGN (CARRIER)	52FE312-3-E	52FE312-3-E
NOTES	1, 2	1, 2

- UNIT RATINGS BASED ON 95F OUTDOOR AIR TEMPERATURE.
- COORDINATE WITH ELECTRICAL DRAWINGS.

CONDENSATE	PUMP	SCHE	DULE
REFERENCE	CP-1		
LOCATION	ELEVATOR		
	MACH RMS		
SERVICE	CONDENSATE		
PUMP TYPE/GEOMETRY	FLOOR		
	MOUNT,		
SHUTOFF HEAD	24'		
SUMP CAPACITY (GAL)	1		
PUMP MOTOR SIZE, HP (4)	1/8		
ELECTRICAL SERVICE (VOLTS/PHASE)	120V / 1 Ø /		
	60 HZ		
BASIS OF DESIGN (LITTLE GIANT):	VCL-24ULS		
NOTES	1, 2, 3		

NOTES:

- GALVANIZED STEEL TANK COVER.
- ABS TANK, VOLUTE, AND SWITH COVER.
- 3. SAFETY SWITCH AND THERMAL OVERLOAD PROTECTION.

AIR DEVICE SCHEDULE						
REFERENCE	SD-1	CD-1	RG-1	RG-2		
TYPE	LOUVERED	LOUVERED	LOUVERED	EGGCRATE		
	GRILLE	FACE	GRILLE	FACE		
SERVICE	SUPPLY	SUPPLY	RETURN /	RETURN /		
	SUPPLI	SUPPLI	TRANSFER	TRANSFER		
BASIS OF DESIGN: TITUS	300FS	TMSA-AA	301FS	50F		
FACE SIZE	AS NOTED	24X24	AS NOTED	24X24		
NECK SIZE	AS NOTED	AS NOTED	AS NOTED	AS NOTED		
MOUNTING	NOTES 1, 3	NOTE 2	NOTE 3	NOTE 2		
DESCRIPTION	ALL ALUMINUM, FINISHED WHITE	ALL ALUMINUM, FINISHED WHITE	· · · · · · · · · · · · · · · · · · ·	ALL ALUMINUM, FINISHED WHITE		
ACCESSORIES / NOTES	1, 3, 6	2, 4	3, 6	2, 5		

ACCESSORIES / NOTES:

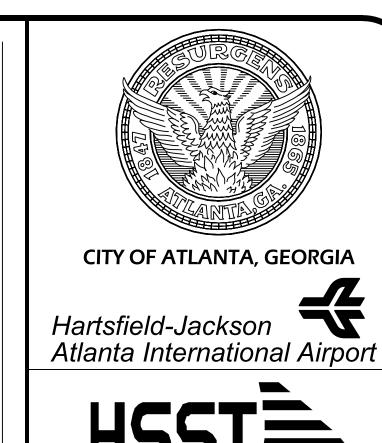
- COORDINATE MOUNTING OF AIR DEVICE WITH BOTTOM OF DUCT.
- COORDINATE MOUNTING OF AIR DEVICE WITH ACCOUSTICAL CEILING.
- COORDINATE MOUNTING OF AIR DEVICE WITH FACE OF DUCT.
- 4. PROVIDE A FACTORY-FABRICATED ACCESSORY INSULATED PLENUM
- PROVIDE LINED SHEET METAL AIR SOUND TRAP PLENUM.
- 6. PROVIDE FACE OPERABLE OPPOSED BLADE DAMPER.

ITIONER	SCHEDU	LE
PAC-TC12	PAC-D1	PAC-D2
CONCOURSE T	CONCOURSE D1	CONCOURSE D2
TC12 / TC13 ROOF	ROOF	ROOF
PENTHOUSE	PENTHOUSE	PENTHOUSE
ELEV. MACH.	ELEV. MACH.	ELEV. MACH.
ROOM	ROOM	ROOM
1500	1500	1500
NOTE 8	NOTE 8	NOTE 8
3/4	3/4	3/4
460V / 3 PHASE	460V / 3 PHASE	460V / 3 PHASE
80.0	80.0	80
67.0	67.0	67
46.0	46.0	46
34.0	34.0	34
15.0	15.0	15
550	550	550
WA4S3-C0Z	WA4S3-C0Z	WA4S3-C0Z
	PAC-TC12 CONCOURSE T TC12 / TC13 ROOF PENTHOUSE ELEV. MACH. ROOM 1500 NOTE 8 3/4 460V / 3 PHASE 80.0 67.0 46.0 34.0 15.0 550	CONCOURSE T TC12 / TC13 ROOF PENTHOUSE PENTHOUSE ELEV. MACH. ROOM ROOM 1500 NOTE 8 NOTE 8 3/4 460V / 3 PHASE 80.0 67.0 46.0 46.0 34.0 15.0 15.0 15.0 15.0 15.0 15.0

NOTES:

NOTES

- 1. PROVIDE MANUFACTURER'S PROGRAMMABLE THERMOSTAT.
- PROVIDE DDC INTEGRATION PACKAGE.
- PROVIDE ENTHALPY ECONOMIZER PACKAGE.
- 4. UNIT RATINGS BASED ON 80/67 DB/WB ENTERING AIR TEMPERATURE AND 95F OUTDOOR AIR TEMPERATURE.
- PROVIDE 2-INCH, PLEATED, DISPOSABLE FILTERS.
- PROVIDE NEMA 1 ELECTRICAL DISCONNECT. COORDINATE WITH ELECTRICAL DRAWINGS.
- 7. PROVIDE ACCESSORY SUPPLY AND RETURN PLENUM.
- 8. ADJUST ECM MOTOR FOR INDICATED CFM FOR FREE BLOW OPERATION.



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PHASE 3 VERTICAL TRANSPORTATION

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL **AIRPORT**

NO. | DATE | BY | REVISION

MECHANICAL SCHEDULES

WBS NUMBER: H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: 6006007929 J. GILLESPIE CONSULTANT PROJECT NUMBER CHECKED BY: 07306.16 REFERENCE NUMBER APPROVED BY: J. GILLESPIE 06.11.2014 SCALE: NONE SHEET NO:

M0.0.3

K:\07306.16 Vertical Transportation Phase 3_CADD\M0.0.3 MECH SCHEDULES.dwg

PART 1 - GENERAL 1.1 SUMMARY Sleeves. Grout. 1.2 DEFINITIONS Examples include above ceilings and chases.

SECTION 15053 - COMMON WORK RESULTS FOR HVAC

A. This Section includes the following:

- Piping materials and installation instructions common to most piping systems.
- Mechanical sleeve seals

Escutcheons.

- Equipment installation requirements common to equipment sections.
- Concrete bases.
- Supports and anchorages.
- Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated
- 1.3 SUBMITTALS
- Welding certificates.
- 1.4 QUALITY ASSURANCE
- A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."
- B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."

2. Certify that each welder has passed AWS qualification tests for welding processes involved and that

- Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
- certification is current. Electrical Characteristics for HVAC Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

PART 2 - PRODUCTS

- 2.1 PIPE, TUBE, AND FITTINGS
- A. Refer to individual Division 15 piping Sections for pipe, tube, and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.
- 2.2 JOINING MATERIALS
- Refer to individual Division 15 piping Sections for special joining materials not listed below.
- B. Pipe-Flange Gasket Materials: ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated.

COMMON WORK RESULTS FOR HVAC

C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

- D. Brazing Filler Metals: AWS A5.8, BCuP Series or BAg1, unless otherwise indicated.
- E. Welding Filler Metals: Comply with AWS D10.12.
- 2.3 MECHANICAL SLEEVE SEALS
- Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and
- B. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
- C. Pressure Plates: Carbon steel. Include two for each sealing element
- D. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.
- A. Galvanized-Steel Sheet: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal
- B. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral
- waterstop, unless otherwise indicated.
- 2.5 ESCUTCHEONS
- Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.
- B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.
- C. One-Piece, Cast-Brass Type: With set screw.
- Finish: Polished chrome-plated and rough brass.
- Split-Casting, Cast-Brass Type: With concealed hinge and set screw. Finish: Polished chrome-plated and rough brass.
- 2.6 GROUT
- Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
- 1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended
- for interior and exterior applications.
- Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength. 3. Packaging: Premixed and factory packaged.
- PART 3 EXECUTION
- 3.1 PIPING SYSTEMS COMMON REQUIREMENTS
- Install piping according to the following requirements and Division 15 Sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination
- C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- Install piping to permit valve servicing.
- Install piping at indicated slopes.
- Install piping free of sags and bends.
- Install fittings for changes in direction and branch connections.

COMMON WORK RESULTS FOR HVAC 15053 - 2

- Install piping to allow application of insulation.
- K. Select system components with pressure rating equal to or greater than system operating pressure.
- Install escutcheons for penetrations of walls, ceilings, and floors.
- M. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor
- N. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve
 - Install steel pipe for sleeves smaller than 6 inches (150 mm) in diameter.
- Install cast-iron "wall pipes" for sleeves 6 inches (150 mm) and larger in diameter.
- Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and
- O. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- 1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and
- P. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Division 7 Section "Through-Penetration Firestop Systems"
- Verify final equipment locations for roughing-in.
- R. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.
- 3.2 PIPING JOINT CONSTRUCTION
- A. Join pipe and fittings according to the following requirements and Division 15 Sections specifying piping systems.
- Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copperphosphorus brazing filler metal complying with AWS A5.8.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as
- Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
- 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
- H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- PIPING CONNECTIONS

each piece of equipment

A. Make connections according to the following, unless otherwise indicated:

Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipmen

COMMON WORK RESULTS FOR HVAC

2. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to

3. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar

- 3.4 EQUIPMENT INSTALLATION COMMON REQUIREMENTS
- Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated. B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- Install HVAC equipment to facilitate service, maintenance, and repair or replacement of components. Connec equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to
- D. Install equipment to allow right of way for piping installed at required slope.
- 3.5 CONCRETE BASES
 - Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.
 - 1. Construct concrete bases of dimensions indicated, but not less than 4 inches (100 mm) larger in both directions than supported unit.
 - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of the base. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into
 - structural concrete floor 4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - Install anchor bolts to elevations required for proper attachment to supported equipment.
 - Install anchor bolts according to anchor-bolt manufacturer's written instructions.
 - 7. Use [3000-psi (20.7-MPa)] < 28-day compressive-strength concrete and reinforcement as specified in Division 3 Section "Cast-in-Place Concrete." ERECTION OF METAL SUPPORTS AND ANCHORAGES
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and

3.7 ERECTION OF WOOD SUPPORTS AND ANCHORAGES

anchor HVAC materials and equipment

Refer to Division 5 Section "Metal Fabrications" for structural steel.

- C. Field Welding: Comply with AWS D1.1.
- A. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor HVAC materials and B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.
- Attach to substrates as required to support applied loads.
- 3.8 GROUTING
- A. Mix and install grout for HVAC equipment base bearing surfaces, pump and other equipment base plates, and
- B. Clean surfaces that will come into contact with grout. Provide forms as required for placement of grout.
- Avoid air entrapment during placement of grout.
- E. Place grout, completely filling equipment bases. Place grout on concrete bases and provide smooth bearing surface for equipment.

COMMON WORK RESULTS FOR HVAC 15053 - 4 COMMON WORK RESULTS FOR HVAC 15053 - 5

SECTION 15058 - COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 - GENERAL 1.1 SUMMARY

Place grout around anchors.

Cure placed grout.

END OF SECTION 15053

- A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.
- 1.2 COORDINATION
- Coordinate features of motors, installed units, and accessory devices to be compatible with the following
- Motor controllers.
- Torque, speed, and horsepower requirements of the load. Ratings and characteristics of supply circuit and required control sequence.
- Ambient and environmental conditions of installation location.
- PART 2 PRODUCTS
- 2.1 GENERAL MOTOR REQUIREMENTS A. Comply with requirements in this Section except when stricter requirements are specified in HVAC equipment schedules or Sections
- B. Comply with NEMA MG 1 unless otherwise indicated.
- 2.2 MOTOR CHARACTERISTICS
- Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet (1000 m) above sea level. B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.
- SINGLE-PHASE MOTORS
- A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor
- application:
- Permanent-split capacitor.
- Split phase. Capacitor start, inductor run.
- Capacitor start, capacitor run. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
- Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
- D. Motors 1/20 HP and Smaller: Shaded-pole type. E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device

shall automatically reset when motor temperature returns to normal range. PART 3 - EXECUTION (Not Applicable)

END OF SECTION 15058

COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

forms and install reinforcing bars through openings at top of inserts. G. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will

not be transmitted to connected equipment H. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

F. Install building attachments within concrete slabs. Install concrete inserts before concrete is placed; fasten inserts to

3.2 EQUIPMENT SUPPORTS

 Fabricate structural-steel stands to support equipment above floor. B. Grouting: Place grout under supports for equipment and make bearing surface smooth

Provide lateral bracing, to prevent swaying, for equipment supports.

SECTION 15062 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M,

B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.

tension, and shear capacities appropriate for supported loads and building materials where used.

A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out.

B. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel anchors, for use in hardened portland cement

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout;

Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches (100 mm)

2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install

B. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other

D. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom

of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends,

15062 - 1

thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-

actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating

concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where

PART 1 - GENERAL

1.1 SUMMARY

PART 2 - PRODUCTS

A. Section Includes:

Fastener systems.

1.2 QUALITY ASSURANCE

A. Copper Pipe Hangers:

2.2 FASTENER SYSTEMS

2.3 EQUIPMENT SUPPORTS

PART 3 - EXECUTION

accessories.

2.4 MISCELLANEOUS MATERIALS

A. Fastener System Installation:

suitable for interior and exterior applications.

Properties: Nonstaining, noncorrosive, and nongaseous.

Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

fasteners according to manufacturer's written instructions.

C. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

Install lateral bracing with pipe hangers and supports to prevent swaying.

HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

Equipment supports

Metal pipe hangers and supports.

"Structural Welding Code - Steel."

2.1 METAL PIPE HANGERS AND SUPPORTS

- 3.3 METAL FABRICATIONS Cut, drill, and fit miscellaneous metal fabrications for equipment supports.
- of shipping size limitations C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality
- of welds; and methods used in correcting welding work; and with the following: 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base

hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for

- Remove welding flux immediately.
- 4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces 3.4 PAINTING A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting
- Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Division 9 painting Sections. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to
- Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction

END OF SECTION 15062

comply with ASTM A 780.

CITY OF ATLANTA, GEORGIA

Hartsfield-Jackson Atlanta International Airport

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SEAL PHASE 3 **VERTICAL TRANSPORTATION**

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL **VIDDOBL**

3	METAL FABRICATIONS	_	MIZE	OIN	Δ I
A.	Cut, drill, and fit miscellaneous metal fabrications for equipment supports.				
В.	Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.				
C.	Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:				
	 Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. 				
	 Obtain fusion without undercut or overlap. 				
	 Remove welding flux immediately. 				
	 Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours. 				
1	PAINTING	NO.	DATE	BY	REVISION
A.	Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting				

MECHANICAL

SPECIFICATIONS

WBS NUMBER: DRAWN BY: H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: 6006007929 J. GILLESPIE ONSULTANT PROJECT NUMBE CHECKED BY: 07306.16 R. ANWAR REFERENCE NUMBER APPROVED BY: J. GILLESPIE DATE: 06.11.2014 SCALE: NONE

K:\07306.16 Vertical Transportation Phase 3_CADD\M0.0.4 MECH SPECIFICATIONS.dwg

SHEET NO:

15058 - 1

HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

15062 - 2

SECTION 15077 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

A. Product Data: Provide letter of compliance for this Specification Section.

PART 1 - GENERAL

1.1 SUMMARY

1.2 SUBMITTAL

Section Includes: Equipment labels.

IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

15077 - 1

1.1 SUMMARY A. Section Includes:

PART 1 - GENERAL

SECTION 15083 - HVAC INSULATION

Insulation Materials

Flexible elastomeric

b. Mineral-fiber.

Insulating cements. Adhesives.

Sealants.

Tapes.

Securements.

B. Related Sections:

Division 15 Section "Metal Ducts" for duct liners.

1.2 SUBMITTALS

Product Data: For each type of product indicated.

1.3 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Insulation and related materials shall have fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing and inspecting agency.

 Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less. 2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

PART 2 - PRODUCTS 2.1 INSULATION MATERIALS

Comply with requirements in Part 3 schedule articles for where insulating materials shall be applied.

Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.

 Products: Subject to compliance with requirements, [provide the following] [provide one of the following] [available products that may be incorporated into the Work include, but are not limited to, the following]:

Aeroflex USA Inc.; Aerocel.

Armacell LLC; AP Armaflex.

RBX Corporation; Insul-Sheet 1800 and Insul-Tube 180.

E. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

Products: Subject to compliance with requirements, [provide one of the following:

CertainTeed Corp.; Duct Wrap.

Johns Manville; Microlite.

Knauf Insulation; Duct Wrap.

2.2 ADHESIVES

Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

Flexible Elastomeric Adhesive: Comply with MIL-A-24179A, Type II, Class I.

Products: Subject to compliance with requirements, provide one of the following:

Aeroflex USA Inc.; Aeroseal. Armacell LCC; 520 Adhesive.

Foster Products Corporation, H. B. Fuller Company; 85-75.

2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-C-19565C,

1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59. Subpart D (EPA Method 24)

Vapor-Barrier Mastic: Water based; suitable for indoor and outdoor use on below ambient services.

Products: Subject to compliance with requirements, provide one of the following:

Childers Products, Division of ITW; CP-35.

Foster Products Corporation, H. B. Fuller Company; 30-90.

ITW TACC, Division of Illinois Tool Works; CB-50.

Water-Vapor Permeance: ASTM E 96, Procedure B, 0.013 perm (0.009 metric perm) at 43-mil (1.09-mm) dry film thickness.

Service Temperature Range: Minus 20 to plus 180 deg F (Minus 29 to plus 82 deg C). 4. Solids Content: ASTM D 1644, 59 percent by volume and 71 percent by weight.

Color: White.

2.4 SEALANTS

A. Joint Sealants

Materials shall be compatible with insulation materials, jackets, and substrates.

Permanently flexible, elastomeric sealant.

Service Temperature Range: Minus 100 to plus 300 deg F (Minus 73 to plus 149 deg C).

5. For indeor applications, use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.5 TAPES

Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

 Products: Subject to compliance with requirements, provide one of the following: Avery Dennison Corporation, Specialty Tapes Division; Fasson 0800.

b. Compac Corp.; 120.

Ideal Tape Co., Inc., an American Biltrite Company; 488 AWF.

Width: 2 inches (50 mm).

Thickness: 3.7 mils (0.093 mm).

Adhesion: 100 ounces force/inch (1.1 N/mm) in width.

Tensile Strength: 34 lbf/inch (6.2 N/mm) in width.

Elongation: 5 percent

HVAC INSULATION 15083 - 2

SECUREMENTS Aluminum Bands: ASTM B 209 (ASTM B 209M), Allov 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch (0.51 mm) thick, 1/2 inch (13 mm) wide with wing or closed seal.

Products: Subject to compliance with requirements, provide one of the following:

Childers Products; Bands.

 PABCO Metals Corporation; Bands RPR Products, Inc.; Bands.

PART 3 - EXECUTION

3.1 PREPARATION A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect

insulation application

B. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water. 3.2 GENERAL INSTALLATION REQUIREMENTS

Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment, ducts and fittings, and piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of equipment, duct system, and pipe system as specified in insulation system schedules. C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not

corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

 Install insulation with longitudinal seams at top and bottom of horizontal runs. Install multiple layers of insulation with longitudinal and end seams staggered

Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer

Install insulation with least number of joints practical.

J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film

K. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

L. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal

M. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches (100 mm) beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.3 PENETRATIONS A. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

Seal penetrations with flashing sealant.

2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.

Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches (50 mm).

4. Seal jacket to wall flashing with flashing sealant.

 Underground piping. 3.7 PIPING INSULATION SCHEDULE

to 2 times the insulation thickness but not less than 3 inches.

A. Refrigerant Suction and Hot-Gas Piping and Tubing: Flexible elastomeric, 1 inch (25 mm) thick.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

HVAC INSULATION 15083 - 5 DUCT INSULATION SCHEDULE

Items insulated: Supply duct.

Items not insulated: return and transfer ducts.

 Items lined: return and transfer ducts END OF SECTION 15083

HVAC INSULATION

PART 1 - GENERAL

1.1 SUMMARY

PART 2 - PRODUCTS

PART 3 - EXECUTION

SECTION 15150 - SANITARY WASTE AND VENT PIPING

Pipe, tube, and fittings.

1.3 QUALITY ASSURANCE

2.1 PIPING MATERIALS

3.1 PIPING APPLICATIONS

3.2 PIPING INSTALLATION

jurisdiction.

JOINT CONSTRUCTION

3.3

PERFORMANCE REQUIREMENTS

Pressurized Condensate Piping: 90 PSI.

Soil, Waste, and Vent Piping: 10-foot head of water.

Copper DWV Tube: ASTM B 306, drainage tube, drawn temper.

Piping materials shall bear label, stamp, or other markings of specified testing agency.

A. This Section includes the following soil and waste, sanitary drainage and vent piping inside the building:

A. Components and installation shall be capable of withstanding the following minimum working pressure, unless

Copper Drainage Fittings: ASME B16.23, cast copper or ASME B16.29, wrought-copper, solder-joint

All aboveground, soil, waste, and vent piping shall be Copper DWV tube, copper drainage fittings, and soldered

A. Basic piping installation requirements are specified in Division 15 Section "Basic Mechanical Materials and

B. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-

D. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having

different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.

C. Install soil and waste drainage and vent piping at the following minimum slopes, unless otherwise indicated:

sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow

is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if 2 fixtures are installed back to

back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not

change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of

CITY OF ATLANTA, GEORGIA Hartsfield-Jackson Atlanta International Airport

HEERY INTERNATIONAL, INC.

999 PEACHTREE STREET,

NE ATLANTA GA 30309

PHONE: 404 419 9190

FAX: 404.946.2017 FAX: 404.522.3823 RICHARD WITTSCHIEBE HAND ARCHITECTS 15 SIMPSON STREET ATLANTA, GA 30308 PHONE: 404.688.2200 FAX: 404.688.2400

44 BROAD STREET

ATLANTA, GA 30303

PHONE: 404,522,3801

PHASE 3 **VERTICAL TRANSPORTATION**

15083 - 6

SEAL

HARTSFIELD-JACKSON **ATLANTA** INTERNATIONAL

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MECHANICAL SPECIFICATIONS

WBS NUMBER: DRAWN BY: H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: 6006007929 J. GILLESPIE CHECKED BY: 07306.16 R. ANWAR REFERENCE NUMBER APPROVED BY: J. GILLESPIE DATE: 06.11.2014 SCALE: NONE SHEET NO:

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HVAC INSULATION

15083 - 1

HVAC INSULATION

15083 - 3

spaced 6 inches o.c.

PIPING INSULATION SCHEDULE, GENERAL

3.4 FLEXIBLE ELASTOMERIC INSULATION INSTALLATION

B. Insulation Installation on Pipe Flanges:

C. Insulation Installation on Pipe Fittings and Elbows:

Install mitered sections of pipe insulation.

Insulation Installation on Valves and Pipe Specialties:

MINERAL-FIBER INSULATION INSTALLATION

coverage of duct and plenum surfaces.

insulation that allow passage of air to surface being insulated.

Install pipe insulation to outer diameter of pipe flange.

Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in

Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe

Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings

3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe

Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings

When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body.

Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent

Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins

 On duct sides with dimensions larger than 18 inches, place pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at

On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct.

Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface.

For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier.

Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from 1 edge

and 1 end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier

Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor

stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt

end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal

5. Overlap unfaced blankets a minimum of 2 inches on longitudinal seams and end joints. At end joints, secure

Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.

Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips

3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins

Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.

Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface.

of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins

Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent

a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct.

b. On duct sides with dimensions larger than 18 inches, space pins 16 inches o.c. each way, and 3 inches

maximum from insulation joints. Install additional pins to hold insulation tightly against surface at

Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface.

For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier.

Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.

Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from 1 edge

and 1 end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching

staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier

b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor

Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install

of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins

Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface.

Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch- wide strips

insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.

stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt

end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal

a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.

Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.

4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to

segments with cut sections of sheet insulation of same thickness as pipe insulation.

Install preformed valve covers manufactured of same material as pipe insulation when available.

eliminate openings in insulation that allow passage of air to surface being insulated.

Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.

Space 3 inches maximum from insulation end joints, and 16 inches o.c

Cover exposed pins and washers with tape matching insulation facing.

to 2 times the insulation thickness but not less than 3 inches.

B. Board Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

on sides and bottom of horizontal ducts and sides of vertical ducts as follows:

Space 3 inches maximum from insulation end joints, and 16 inches o.c.

Cover exposed pins and washers with tape matching insulation facing.

Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.

Pins may be omitted from top surface of horizontal, rectangular ducts and plenums

A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

on sides and bottom of horizontal ducts and sides of vertical ducts as follows

Do not overcompress insulation during installation

mastic, and sealant at joints, seams, and protrusions.

with steel bands spaced a maximum of 18 inches o.c.

Do not overcompress insulation during installation

mastic, and sealant at joints, seams, and protrusions

spaced 6 inches o.c.

coverage of duct and plenum surfaces.

HVAC INSULATION

Impale insulation over pins and attach speed washers.

in insulation that allow passage of air to surface being insulated.

in insulation that allow passage of air to surface being insulated.

Install insulation to flanges as specified for flange insulation application.

A. Basic piping joint construction requirements are specified in Division 15 Section "Basic Mechanical Materials and B. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder; and Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and ASTM B 828 procedure, unless otherwise indicated. pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's HANGER AND SUPPORT INSTALLATION Install supports according to Division 15 Section "Hangers and Supports." Support vertical piping and tubing at base. 3.5 CLEANING Clean interior of piping. Remove dirt and debris as work progresses. END OF SECTION 15150 SANITARY WASTE AND VENT PIPING 15150 - 1

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3.2 CONNECTIONS 3.3 PIPE JOINT CONSTRUCTION E. Compressor: Hermetically sealed, reciprocating or scroll type, 3600 rpm maximum, and resiliently mounted with SECTION 15183 - REFRIGERANT PIPING positive lubrication and internal motor protection. A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement A. Soldered Joints: Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook." PART 1 - GENERAL of piping, fittings, and specialties. F. Evaporator Coil: Direct-expansion coil with seamless copper tubes expanded into aluminum fins. B. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube." 1.1 SUMMARY G. Disposable Filters: 1-inch- thick, glass-fiber, [flat] panel filters. Connect piping to pumps. 1. Use Type BcuP, copper-phosphorus alloy for joining copper socket fittings with copper pipe. This Section includes refrigerant piping used for air-conditioning applications. H. Refrigeration System: Factory assembled and tested, and charged with CFC-free refrigerant; consisting of piping Install electrical connections for power, controls, and devices. Use Type BAg, cadmium-free silver alloy for joining copper with bronze or steel. 1.2 PERFORMANCE REQUIREMENTS and accessories connecting compressor, evaporator coil, and condenser coil, and including the following: D. Ground equipment according to Division 16 Section "Grounding and Bonding." 3.4 HANGERS AND SUPPORTS A. Line Test Pressure for Refrigerant R-22: E. Connect wiring according to Division 16 Section "Conductors and Cables." A. Hanger, support, and anchor products are specified in Division 15 Section "Hangers and Supports." Control Package: Factory wired, including contactor, high- and low-pressure cutouts, internal-winding thermostat Suction Lines for Air-Conditioning Applications: 185 psig (1276 kPa). 3.3 STARTUP SERVICE 3.5 FIELD QUALITY CONTROL for compressor, control-circuit transformer, and noncycling reset relay. Liquid Lines: 325 psig (2241 kPa). Engage a factory-authorized service representative to perform startup service. Time-Delay Relay: Five-minute delay to prevent compressor cycling. A. Tests and Inspections: 1.3 QUALITY ASSURANCE CITY OF ATLANTA, GEORGIA Complete installation and startup checks according to manufacturer's written instructions. Comply with ASME B31.5, Chapter VI. Adjustable Thermostat: Remote to control the following: Comply with ASHRAE 15, "Safety Code for Refrigeration Systems." Check piping connections for tightness. 2. Test high- and low-pressure side piping of each system separately at not less than the pressures indicated in Supply fan. B. Comply with ASME B31.5, "Refrigeration Piping and Heat Transfer Components." Part 1 "Performance Requirements" Article. 3. Prime pump by opening suction valves and closing drains, and prepare pump for operation. b. Compressor. 1.4 PRODUCT STORAGE AND HANDLING Start motor. Hartsfield-Jackson Fill system with nitrogen to the required test pressure. System Selector Switch: Off-heat-auto-cool. A. Store piping in a clean and protected area with end caps in place to ensure that piping interior and exterior are clean System shall maintain test pressure at the manifold gage throughout duration of test. END OF SECTION 15185 Atlanta International Airport when installed. Fan Control Switch: Auto-on. Test joints and fittings with electronic leak detector or by brushing a small amount of soap and glycerin PART 2 - PRODUCTS Time Clock: Cycle unit on and off. 2.1 COPPER TUBE AND FITTINGS 6. Microprocessor Control Panel: Controls unit functions, including refrigeration and safety controls, and the Remake leaking joints using new materials, and retest until satisfactory results are achieved. A. Copper Tube: ASTM B 88, Type K or L. 3.6 SYSTEM CHARGING Supply fan. B. Wrought-Copper Fittings: ASME B16.22. A. Charge system using the following procedures: b. Compressors. C. Wrought-Copper Unions: ASME B16.22. Install core in filter dryers after leak test but before evacuation. J. Ventilation Options for Units 15 Tons (50 kW) and Smaller: D. Solder Filler Metals: ASTM B 32. Use 95-5 tin antimony or alloy HB solder to join copper socket fittings on Evacuate entire refrigerant system with a vacuum pump to 500 micrometers (67 Pa). If vacuum holds for 12 1. Economizer: Damper assembly allowing induction of up to 100 percent outside air to maintain a selected copper pipe. hours, system is ready for charging. mixed-air temperature; and exhaust damper and spring-return, low-voltage, modulating damper motor with E. Brazing Filler Metals: AWS A5.8. HEERY INTERNATIONAL, INC. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig (14 kPa). minimum position adjustment. 999 PEACHTREE STREET, F. Flexible Connectors NE ATLANTA GA 30309 Charge system with a new filter-dryer core in charging line. PART 3 - EXECUTION PHONE: 404 419 9190 Body: Tin-bronze bellows with woven, flexible, tinned-bronze-wire-reinforced protective jacket. END OF SECTION 15183 3.1 INSTALLATION FAX: 404.946.2017 End Connections: Socket ends. RICHARD WITTSCHIEBE HAND ARCHITECTS Anchor units to structure. 15 SIMPSON STREET 3. Offset Performance: Capable of minimum 3/4-inch (20-mm) misalignment in minimum 7-inch- (180-mm-) 3.2 FIELD QUALITY CONTROL ATLANTA, GA 30308 PHONE: 404.688.2200 Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field- Pressure Rating: Factory test at minimum 500 psig (3450 kPa). FAX: 404.688.2400 assembled components and equipment installation, including connections and to assist in field testing. Report results Maximum Operating Temperature: 250 deg F (121 deg C). 2.2 VALVES AND SPECIALTIES B. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist. C. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit A. Service Valves: operation. Remove malfunctioning units, replace with new components, and retest. Body: Forged brass with brass cap including key end to remove core. D. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment. Core: Removable ball-type check valve with stainless-steel spring. END OF SECTION 15735 Seat: Polytetrafluoroethylene. End Connections: Copper spring. Working Pressure Rating: 500 psig (3450 kPa). 2.3 REFRIGERANTS Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following: Manufacturers: Subject to compliance with requirements, provide products by one of the following: Atofina Chemicals, Inc. SEAL DuPont Company; Fluorochemicals Div. PHASE 3 15735 - 2 REFRIGERANT PIPING 15183 - 1 REFRIGERANT PIPING 15183 - 3 HYDRONIC PUMPS 15185 - 2 SELF-CONTAINED AIR-CONDITIONERS **VERTICAL TRANSPORTATION** Honeywell, Inc.; Genetron Refrigerants. SECTION 15185 - HYDRONIC PUMPS SECTION 15735 - SELF-CONTAINED AIR-CONDITIONERS SECTION 15738 - SPLIT-SYSTEM AIR-CONDITIONING UNITS C. ASHRAE 34, R-410A. PART 1 - GENERAL PART 1 - GENERAL PART 1 - GENERAL PART 3 - EXECUTION 1.1 RELATED DOCUMENTS 1.1 SUMMARY 1.1 SUMMARY HARTSFIELD-JACKSON 3.1 PIPING APPLICATIONS A. This Section includes split-system air-conditioning and heat pump units consisting of separate evaporator-fan and A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 A. This Section includes packaged air-conditioning units with refrigerant compressors, water-cooled condensers, and A. Suction Lines NPS 1-1/2 (DN 40) and Smaller for Conventional Air-Conditioning Applications: Copper, Type Specification Sections, apply to this Section. controls; intended for indoor installations. compressor-condenser components. Units are designed for exposed mounting ACR, annealed-temper tubing and wrought-copper fittings with brazed or soldered joints. ATLANTA 1.2 SUBMITTALS 1.2 SUBMITTALS 1.2 SUMMARY B. Hot-Gas and Liquid Lines: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed or A. This Section includes the following: Product Data: For each unit indicated. A. Product Data: For each unit indicated. Include performance data in terms of capacities, outlet velocities, static soldered joints. INTERNATIONAL pressures, sound power characteristics, motor requirements, and electrical characteristics. Automatic condensate pump units. B. Operation and maintenance data C. Hot-Gas and Liquid Lines: Copper, Type ACR, K, [L, drawn-temper tubing and wrought-copper fittings with Operation and maintenance data. 1.3 QUALITY ASSURANCE 1.3 DEFINITIONS **AIRPORT** 1.3 OUALITY ASSURANCE A. Buna-N: Nitrile rubber. A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a Install service valves for gage taps at strainers if they are not an integral part of strainers. testing agency acceptable to authorities having jurisdiction, and marked for intended use. A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a E. Install a check valve at the compressor discharge and a liquid accumulator at the compressor suction connection. B. EPT: Ethylene propylene terpolymer. testing agency acceptable to authorities having jurisdiction, and marked for intended use. B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2010, Section 5 - "Systems and Equipment" and 1.4 SUBMITTALS 3.2 PIPING INSTALLATION B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2010, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup." Install refrigerant piping according to ASHRAE 15. Product Data: Include certified performance curves and rated capacities, operating characteristics, furnished Section 7 - "Construction and Startup." C. ASHRAE/IESNA 90.1-2010 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2010, Section 6 specialties, final impeller dimensions, and accessories for each type of product indicated. Indicate pump's operating B. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to "Heating, Ventilating, and Air-Conditioning." C. ASHRAE/IESNA 90.1-2010 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2010, Section 6 building walls. Diagonal runs are prohibited unless specifically indicated otherwise. "Heating, Ventilating, and Air-Conditioning." 1.4 WARRANTY B. Operation and Maintenance Data: For pumps to include in emergency, operation, and maintenance manuals. 1.4 WARRANTY Install piping adjacent to machines to allow service and maintenance. A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace self-contained 1.5 QUALITY ASSURANCE Install piping free of sags and bends. A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace split-system airair-conditioning units that fail in materials and workmanship within five years from date of Substantial Completion. conditioning units that fail in materials and workmanship within five years from date of Substantial Completion. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a E. Install fittings for changes in direction and branch connections. PART 2 - PRODUCTS testing agency acceptable to authorities having jurisdiction, and marked for intended use. 2.1 MANUFACTURERS F. Select system components with pressure rating equal to or greater than system operating pressure. B. UL Compliance: Comply with UL 778 for motor-operated water pumps. 2.1 MANUFACTURERS G. Refer to Division 15 Sections "HVAC Instrumentation and Controls" and "Sequence of Operation" for solenoid Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be 1.6 DELIVERY, STORAGE, AND HANDLING valve controllers, control wiring, and sequence of operation. incorporated into the Work include, but are not limited to, the following: A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be NO. | DATE | BY | REVISION Store pumps in dry location. incorporated into the Work include, but are not limited to, the following: H. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings. Manufacturers: Subject to compliance with requirements, provide products by one of the following: B. Retain protective covers for flanges and protective coatings during storage. Manufacturers: Subject to compliance with requirements, provide products by one of the following: I. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in Bard. Protect bearings and couplings against damage from sand, grit, and other foreign matter. Carrier Air Conditioning; Div. of Carrier Corp. accessible locations to allow for service and inspection. Install access doors or panels as specified in Division 8 b. Marvair. Section "Access Doors and Frames" if valves or equipment requiring maintenance is concealed behind finished Comply with pump manufacturer's written rigging instructions. Mitsubishi Electronics America, Inc.; HVAC Division. 2.2 PACKAGED UNITS **MECHANICAL** PART 2 - PRODUCTS Sanyo Fisher (U.S.A.) Corp. Description: Self-contained, factory-assembled and -wired unit; consisting of cabinet, compressor, evaporator fan, Install refrigerant piping in rigid or flexible conduit in locations where exposed to mechanical injury. 2.1 MANUFACTURERS evaporator coil, air filters, integral water-cooled condenser, and controls; and fully charged with refrigerant and oil. 2.2 EVAPORATOR-FAN UNIT K. Slope refrigerant piping as follows: **SPECIFICATIONS** A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection: A. Concealed Unit Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor. back of panel Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may C. Cabinet Frame and Panels: Structural-steel frame with galvanized-steel panels with baked-enamel finish in color Install horizontal suction lines with a uniform slope downward to compressor. be incorporated into the Work include, but are not limited to, manufacturers specified. selected by Architect, and with access doors or panels. Insulation: Faced, glass-fiber duct liner. Install traps and double risers to entrain oil in vertical runs. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers Drain Pans: Galvanized steel, with connection for drain; insulated and complying with ASHRAE 62.1-2010. Insulation: Minimum 1/2-inch- thick, acoustic duct liner on cabinet interior and control panel. Liquid lines may be installed level. specified. 3. Airstream Surfaces: Surfaces in contacting airstream shall comply with requirements in ASHRAE 62.1-2010. Drain Pan: Galvanized steel with corrosion-resistant coating. 2.2 AUTOMATIC CONDENSATE PUMP UNITS L. When brazing or soldering, remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and Discharge Plenum: Cabinet extension with directional louvers. Wall-Mounting, Unit Cabinet: Enameled steel with removable panels on front and ends. packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb. WBS NUMBER: A. Manufacturers: DRAWN BY: Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1- Discharge Grille. M. Install pipe sleeves at penetrations in exterior walls and floor assemblies. H.03.90.202 J. GILLESPIE Aurora Pump; Division of Pentair Pump Group. Insulation: Faced, glass-fiber, duct liner. N. Seal penetrations through fire and smoke barriers according to Division 7 Section "Through-Penetration Firestop Flowserve Corporation; Div. of Ingersoll-Dresser Pumps. FC NUMBER: D. Evaporator Fan: Galvanized-steel, double-width, double-inlet, [forward-curved] [airfoil] centrifugal fan; statically DESIGNED BY: Drain Pans: Galvanized steel, with connection for drain; insulated and complying with ASHRAE 62.1-2010. and dynamically balanced. Little Giant Pump Co.; Subsidiary of Tecumseh Products Co. 6006007929 J. GILLESPIE Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1- Drive: Belt, with fan mounted on permanently lubricated bearings. B. Description: Fackaged units with corrosion-resistant pump, plastic tank with cover, and automatic controls. Include DNSULTANT PROJECT NUMBE CHECKED BY: factory- or field-installed check valve and a 72-inch- (1800-mm-) minimum, electrical power cord with plug. Fan Sheaves: Cast-iron or steel sheaves, dynamically balanced, bored to fit shafts and keyed. C. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with AHRI 210/240, and with P. Install sleeves through floors, walls, or ceilings, sized to permit installation of full-thickness insulation. 07306.16 R. ANWAR PART 3 - EXECUTION Motor Sheave: Variable and adjustable pitch selected so required rpm are obtained when set at midposition. thermal-expansion valve. Q. Seal pipe penetrations through exterior walls according to Division 7 Section "Joint Sealants" for materials and 3.1 PUMP INSTALLATION Bearings: Grease lubricated with grease lines extended to exterior of unit. Evaporator Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor. REFERENCE NUMBER APPROVED BY: A. Automatic Condensate Pump Units: Install units for collecting condensate and extend to open drain. E. Fan Motor: Multispeed. R. Identify refrigerant piping and valves according to Division 15 Section "Mechanical Identification." Motors: Premium-efficiency, open-dripproof] type. J. GILLESPIE 6. Isolation: Mount fan and motor on common subbase and mount assembly on spring isolators with minimum F. Filters: ASHRAE 52.2 MERV rating of 6 or higher. DATE: static deflection of 1 inch (25 mm). REFRIGERANT PIPING 15183 - 2 HYDRONIC PUMPS 15185 - 1 SELF-CONTAINED AIR-CONDITIONERS SPLIT-SYSTEM AIR-CONDITIONING UNITS 15738 - 1 06.11.2014

SCALE: NONE

SHEET NO:

M0.0.6

44 BROAD STREET

ATLANTA, GA 30303

PHONE: 404,522,3801

FAX: 404.522.3823

- 2.3 AIR-COOLED, COMPRESSOR-CONDENSER UNIT
- A. Casing steel, finished with baked enamel, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
- Compressor: Hermetically sealed scroll type with crankcase heater and mounted on vibration isolation. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
- Refrigerant: R-410A.
- Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with AHRI 210/240, and with
- Fan: Aluminum-propeller type, directly connected to motor.
- Motor: Permanently lubricated, with integral thermal-overload protection.
- F. Low Ambient Kit: Permits operation down to 32 deg F (7 deg C).
- G. Mounting Base: Polyethylene.
- H. Minimum Energy Efficiency: Comply with ASHRAE/IESNA 90.1-2010, "Energy Standard for Buildings except Low-Rise Residential Buildings.
- 2.4 ACCESSORIES
- Thermostat: Low voltage with subbase to control compressor and evaporator fan.
- Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.
- Minimum Insulation Thickness: 1 inch (25 mm) thick.

PART 3 - EXECUTION

- 3.1 INSTALLATION
- A. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building
- B. Install ground-mounted, compressor-condenser components on 4-inch- (100-mm-) thick, reinforced concrete base; 4 inches (100 mm) larger on each side than unit. Concrete, reinforcement, and formwork are specified in Division 3 Section "Cast-in-Place Concrete." Coordinate anchor installation with concrete base
- Install ground-mounted, compressor-condenser components on polyethylene mounting base.
- 3.2 CONNECTIONS
- Connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.
- B. Connect supply and return water coil with shutoff-duty valve and union or flange on the supply connection and with throttling-duty valve and union or flange on the return connection.
- C. Connect supply and return condenser connections with shutoff-duty valve and union or flange on the supply connection and with throttling-duty valve and union or flange on the return connection.
- Install piping adjacent to unit to allow service and maintenance
- 3.3 FIELD QUALITY CONTROL
- A. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist. B. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation. Remove malfunctioning units, replace with new components, and retest.
- Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

END OF SECTION 15738

PART 3 - EXECUTION

3.1 INSTALLATION

- Install unit heaters to comply with NFPA 90A.
- B. Install wall-mounting thermostats and switch controls in electrical outlet boxes at heights to match lighting controls. Verify location of thermostats and other exposed control sensors with Drawings and room details before installation.
- Unless otherwise indicated, install union and gate or ball valve on supply-water connection and union and calibrated balancing valve on return-water connection of unit heater
- Comply with safety requirements in UL 1995.
- E. Ground equipment according to Division 16 Section "Grounding and Bonding."
- F. Connect wiring according to Division 16 Section "Conductors and Cables." 3.2 FIELD QUALITY CONTROL
- A. Perform the following field tests and inspections and prepare test reports:
- Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation
- Operate electric heating elements through each stage to verify proper operation and electrical connections.
- Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 15762

UNIT HEATERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

SECTION 15815 - METAL DUCTS

Duct liner.

B. Related Sections:

62.1-2010

1.3 SUBMITTALS

PART 2 - PRODUCTS

Rectangular ducts and fittings.

Round ducts and fittings.

Sealants and gaskets.

Hangers and supports.

Sheet metal materials.

requirements for metal ducts.

Product Data: For each type of product indicated.

"HVAC System Construction and Insulation."

2.1 RECTANGULAR DUCTS AND FITTINGS

QUALITY ASSURANCE

PERFORMANCE REQUIREMENTS

doors and panels, turning vanes, and flexible ducts.

Equipment" and Section 7 - "Construction and System Start-Up."

"HVAC Duct Construction Standards - Metal and Flexible."

Division 15 Section "Duct Accessories" for dampers, sound-control devices, duct-mounting access

Division 15 Section "Testing, Adjusting, and Balancing" for testing, adjusting, and balancing

A. Structural Performance: Duct hangers and supports shall withstand the effects of gravity loads and stresses

A. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2010, Section 5 - "Systems and

B. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2010, Section 6.4.4 -

General Fεbrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal

Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction

Standards - Metal and Flexible," Figure 1-4, "Transverse (Girth) Joints," for static-pressure class, applicable

Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction

Standards - Metal and Flexible," Figure 1-5, "Longitudinal Seams - Rectangular Ducts," for static-pressure

class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in

according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 2, "Fittings

sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's

and Flexible" based on indicated static-pressure class unless otherwise indicated.

within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal

Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE

15762 - 2

METAL DUCTS

surface of the duct to act as a moisture repellent and erosion-resistant coating. Antimicrobial

15738 - 2

SECTION 15762 - UNIT HEATERS

SPLIT-SYSTEM AIR-CONDITIONING UNITS

PART 1 - GENERAL

- 1.1 SUMMARY
- A. Section Includes:
- Wall and ceiling heaters with propeller fans and electric-resistance heating coils. 1.2 SUBMITTALS
- A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories for each
- Operation and maintenance data.
- 1.3 QUALITY ASSURANCE
- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2010, Section 5 "Systems and Equipment" and Section 7 - "Construction and Startup."
- ASHRAE/IESNA 90.1-2010 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2010, Section 6 -

"Heating, Ventilating, and Air-Conditioning. PART 2 - PRODUCTS

- 2.1 WALL AND CEILING HEATERS A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
- Markel Products; a division of TPI Corporation.
- Marley Electric Heating; a division of Marley Engineered Products.
- 3. QMark Electric Heating; a division of Marley Engineered Products.
- D. Description: An assembly including chassis, electric heating coil, fan, motor, and controls. Comply with UL 2021.
- E. Cabinet:
- Front Panel: Stamped-steel louver or Extruded-aluminum bar grille, with removable panels fastened with tamperproof fasteners.
- 2. Finish: Baked enamel over baked-on primer with manufacturer's standard color selected by Architect, applied to factory-assembled and -tested wall and ceiling heaters before shipping. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-
- F. Surface-Mounting Cabinet Enclosure: Steel with finish to match cabinet.
- G. Electric-Resistance Heating Coil: Nickel-chromium heating wire, free from expansion noise and hum, embedded in magnesium oxide refractory and sealed in corrosion-resistant metallic sheath. Terminate elements in stainless-steel, machine-staked terminals secured with stainless-steel hardware, and limit controls for high temperature protection. Provide integral circuit breaker for overcurrent protection.
- Fan: Aluminum propeller directly connected to motor.
- Motor: Permanently lubricated. Comply with requirements in Division 15 Section "Common Motor Requirements for HVAC Equipment."
- Controls: Low-voltage relay with transformer kit. J. Electrical Connection: Factory wire motors and controls for a single field connection with disconnect switch.
- K. Capacities and Characteristics: Refer to Schedule in Drawings

UNIT HEATERS

METAL DUCTS

SMACNA's "HVAC Duct Construction Standards - Metal and Flexible." Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate

and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, ductsupport intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and

15815 - 1

- Water-Based Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C 916.
- a. For indoor applications, use adhesive that has a VOC content of 80 g/L or less when calculated
- 1. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for apacitor-discharge welding, 0.106-inch-diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.
- C. Shop Application of Duct Liner: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Figure 2-19, "Flexible Duct Liner Installation."
- 1. Adhere a single layer of indicated thickness of duct liner with at least 90 percent adhesive coverage at liner contact surface area. Attaining indicated thickness with multiple layers of duct liner is
- Apply adhesive to transverse edges of liner facing upstream that do not receive metal nosing.
- Butt transverse joints without gaps, and coat joint with adhesive.
- 4. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge
- size and dimensions of standard liner make longitudinal joints necessary.
- Apply adhesive coating on longitudinal seams in ducts with air velocity of 2500 fpm.
- 8. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profiles or are integrally formed from duct wall. Fabricate edge facings at the
- Fan discharges.
- Upstream edges of transverse joints in ducts where air velocities are higher than 2500 fpm or
- 9. Secure insulation between perforated sheet metal inner duct of same thickness as specified for outer shell. Use mechanical fasteners that maintain inner duct at uniform distance from outer shell without
- Sheet Metal Inner Duct Perforations: 3/32-inch diameter, with an overall open area of 23
- 10. Terminate inner ducts with buildouts attached to fire-damper sleeves, dampers, turning vane assemblies, or other devices. Fabricated buildouts (metal hat sections) or other buildout means are optional; when used, secure buildouts to duct walls with bolts, screws, rivets, or welds.
- to UL 723; certified by an NRTL.
- B. Two-Part Tape Sealing System:

- A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and
- C. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.
- NAIMA AH124. "Fibrous Glass Duct Liner Standard.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - CertainTeed Corporation; Insulation Group.
 - Johns Manville.
- Maximum Thermal Conductivity:

METAL DUCTS

- - D. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.
 - E. Steel Cables for Stainless-Steel Ducts: Stainless steel complying with ASTM A 492.

C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible,"

Table 4-1, "Rectangular Duct Hangers Minimum Size," and Table 4-2, "Minimum Hanger Sizes for Round

Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator

10. For indoor applications, use sealant that has a VOC content of 250 g/L or less when calculated

to react exothermically with tape to form hard, durable, airtight seal.

6. Maximum Static-Pressure Class: 10-inch wg, positive and negative.

9. Substrate: Compatible with galvanized sheet steel (bare), stainless steel, or aluminum.

Service Temperature: Minus 40 to plus 200 deg F.

according to 40 CFR 59, Subpart D (EPA Method 24).

Maximum Static-Pressure Class: 10-inch wg, positive and negative.

General: Single-component, acid-curing, silicone, elastomeric

according to 40 CFR 59, Subpart D (EPA Method 24).

inch wg static-pressure class, positive or negative

threads painted with zinc-chromate primer after installation.

E. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

EPDM O-ring to seal in concave bead in coupling or fitting spigot.

A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.

Substrate: Compatible with galvanized sheet steel, stainless steel, or aluminum sheets.

6. For indoor applications, use sealant that has a VOC content of 250 g/L or less when calculated

Seal shall provide maximum leakage class of 3 cfm/100 sq. ft. at 1-inch wg and shall be rated for 10-

Double-lipped, EPDM O-ring seal, mechanically fastened to factory-fabricated couplings and fitting

15815 - 4

15815 - 5

B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with

Tape Width: 3 inches.

Water resistant

Sealant: Modified styrene acrylic.

Mold and mildew resistant.

Service: Indoor and outdoor

Application Method: Brush on.

Shore A Hardness: Minimum 20

VOC: Maximum 75 g/L (less water).

D. Flanged Joint Sealant: Comply with ASTM C 920.

Solids Content: Minimum 65 percent

C. Water-Based Joint and Seam Sealant:

Mold and mildew resistant.

Service: Indoor or outdoor.

Water resistant.

Type: S.

Grade: NS

Class: 25.

Use: O.

F. Round Duct Joint O-Ring Seals:

HANGERS AND SUPPORTS

- F. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device. G. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct
- H. Trapeze and Riser Supports:
 - Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
- Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.
- 3.1 DUCT INSTALLATION Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated
- unless deviations to layout are approved on Shop Drawings and Coordination Drawings. B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.
- Install round ducts in maximum practical lengths.
- Install ducts with fewest possible joints.
- E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch
- F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building
- H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.

thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.

- Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures. J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal
- K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Division 15 Section "Duct Accessories" for fire and smoke dampers.
- L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "Duct Cleanliness for New Construction Guidelines."
- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- Metal and Flexible":
 - Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible."

B. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards -

Unconditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class B.

CITY OF ATLANTA, GEORGIA Hartsfield-Jackson Atlanta International Airport

HEERY INTERNATIONAL, INC. 999 PEACHTREE STREET, 44 BROAD STREET

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PHONE: 404,522,3801

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PHASE 3 **VERTICAL TRANSPORTATION**

SEAL

HARTSFIELD-JACKSON **ATLANTA** INTERNATIONAL

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NΟ	DATE	RY	REVISION

MECHANICAL SPECIFICATIONS

WBS NUMBER: DRAWN BY: H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: 6006007929 J. GILLESPIE ONSULTANT PROJECT NUMBE CHECKED BY: 07306.16 R. ANWAR REFERENCE NUMBER APPROVED BY: J. GILLESPIE DATE: 06.11.2014 SCALE: NONE SHEET NO:

K:\07306.16 Vertical Transportation Phase 3_CADD\M0.0.7 MECH SPECIFICATIONS.dwg

15762 - 1

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Seams - Round Duct and Fittings," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in

2.2 ROUND DUCTS AND FITTINGS

Lindab Inc.

b. McGill AirFlow LLC.

SEMCO Incorporated.

d. Sheet Metal Connectors, Inc

e. Spiral Manufacturing Co., Inc

SMACNA's "HVAC Duct Construction Standards - Metal and Flexible." Fabricate round ducts larger Than 90 inches in diameter with butt-welded longitudinal seams. D. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "90 Degree Tees and Laterals," and Figure 3-5, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and

General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal

and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless

Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction

Standards - Metal and Flexible," Figure 3-2, "Transverse Joints - Round Duct," for static-pressure class,

applicable sealing requirements, materials involved, duct-support intervals, and other provisions in

that may be incorporated into the Work include, but are not limited to, the following:

Manufacturers: Subject to compliance with requirements, available manufacturers offering products

other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible." SHEET METAL MATERIALS

SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.

- other imperfections. B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M. Galvanized Coating Designation: G60.
- 2.4 DUCT LINER Fibrous-Glass Duct Liner: Comply with ASTM C 1071, NFPA 90A, or NFPA 90B; and with

 - Knauf Insulation
 - d. Owens Corning.
 - Type I, Flexible: [0.27 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.
 - Antimicrobial Erosion-Resistant Coating: Apply to the surface of the liner that will form the interior

15815 - 2

- compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC
- according to 40 CFR 59, Subpart D (EPA Method 24).
- 2. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick galvanized steel; with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches

- 5. Do not apply liner in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct
- 7. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely; at 3 inches from transverse joints and at intervals not exceeding 18 inches
- Intervals of lined duct preceding unlined duct.
- compressing insulation.
- A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according

METAL DUCTS

15815 - 3

METAL DUCTS

3.2 DUCT SEALING

- 3. Unconditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal 3.3 HANGER AND SUPPORT INSTALLATION A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Hangers and Supports. B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached. Where practical, install concrete inserts before placing concrete.
 - Install powder-actuated concrete fasteners after concrete is placed and completely cured. 3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
 - 4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.
 - Do not use powder-actuated concrete fasteners for seismic restraints.
- Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Table 4-1, "Rectangular Duct Hangers Minimum Size," and Table 4-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.
- D. Hangers Exposed to View: Threaded rod and angle or channel supports.
- Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.
- F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- CONNECTIONS
- A. Make connections to equipment with flexible connectors complying with Division 15 Section "Duct
- B. Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.
- 3.5 DUCT CLEANING
- Clean new duct system(s) before testing, adjusting, and balancing.
- B. Use service openings for entry and inspection.
- Create new openings and install access panels appropriate for duct static-pressure class if required for cleaning access. Provide insulated panels for insulated or lined duct. Patch insulation and liner as recommended by duct liner manufacturer. Comply with Division 15 Section "Duct Accessories" for access panels and doors.
- Disconnect and reconnect flexible ducts as needed for cleaning and inspection.
- Remove and reinstall ceiling to gain access during the cleaning process.
- C. Particulate Collection and Odor Control:
- When venting vacuuming system inside the building, use HEPA filtration with 99.97 percent collection efficiency for 0.3-micron-size (or larger) particles.
- 2. When venting vacuuming system to outdoors, use filter to collect debris removed from HVAC system, and locate exhaust downwind and away from air intakes and other points of entry into
- D. Clean the following components by removing surface contaminants and deposits:
- Air outlets and inlets (registers, grilles, and diffusers).
- Supply-air ducts, dampers, actuators, and turning vanes

METAL DUCTS 15815 - 6 METAL DUCTS 15815 - 8

SECTION 15820 - DUCT ACCESSORIES

Manual volume dampers.

Duct-mounted access doors.

Duct accessory hardware.

Special fittings.

C. Operation and maintenance data.

1.3 QUALITY ASSURANCE

PART 2 - PRODUCTS

2.1 MATERIALS

Product Data: For each type of product indicated.

construction. Include the following:

Control damper installations.

B. Comply with AMCA 500-D testing for damper rating.

Galvanized Coating Designation: G60.

for lengths longer than 36 inches.

E. Standard, Steel, Manual Volume Dampers:

McGill AirFlow LLC.

Ruskin Company.

METALAIRE, Inc.

Nailor Industries Inc.

Exposed-Surface Finish: Mill phosphatized.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

compatible materials for aluminum and stainless-steel ducts.

Manual volume damper installations.

d. Wiring Diagrams: For power, signal, and control wiring.

of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

"Installation of Warm Air Heating and Air Conditioning Systems."

Control dampers.

Turning vanes.

Flexible ducts.

SUBMITTALS

Flange connectors.

A. Section Includes:

- E. Mechanical Cleaning Methodology: PART 1 - GENERAL Clean metal duct systems using mechanical cleaning methods that extract contaminants from within 1.1 SUMMARY duct systems and remove contaminants from building.
- Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
- Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.
- Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet Replace fibrous-glass duct liner that is damaged, deteriorated, or delaminated or that has friable material, mold, or fungus growth.
- Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
- Provide drainage and cleanup for wash-down procedures.
- Antimicrobial Agents and Coatings: Apply EPA-registered antimicrobial agents if fungus is present. Apply antimicrobial agents according to manufacturer's written instructions after removal of surface deposits and debris.
- 3.6 START UP
- A. Air Balance: Comply with requirements in Division 15 Section "Testing, Adjusting, and Balancing."
- 3.7 DUCT SCHEDULE
- A. Supply Ducts:
- Ducts Connected Downstream of Terminal Units:
 - Pressure Class: Positive 1-inch wg
 - b. Minimum SMACNA Seal Class: C
 - SMACNA Leakage Class for Rectangular: 24.

 - d. SMACNA Leakage Class for Round and Flat Oval: 12.
- Ducts Connected Downstream of Variable-Air-Volume Air-Handling Units
- Pressure Class: Positive 6-inch wg.
- Minimum SMACNA Seal Class: A.
- SMACNA Leakage Class for Rectangular: 6. SMACNA Leakage Class for Round and Flat Oval: 3.
- B. Intermediate Reinforcement:
- Galvanized-Steel Ducts: Galvanized steel. C. Liner:
- Return air grille plenums: Fibrous glass, Type I, 1 inch thick.

METAL DUCTS

- D. Elbow Configuration: Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and

 - Flexible," Figure 2-2, "Rectangular Elbows."
 - Velocity 1000 fpm or Lower:
 - Radius Type RE 1 with minimum 0.5 radius-to-diameter ratio. Mitered Type RE 4 without vanes.
 - Velocity 1000 to 1500 fpm:
 - Radius Type RE 1 with minimum 1.0 radius-to-diameter ratio.
 - Radius Type RE 3 with minimum 0.5 radius-to-diameter ratio and two vanes.

Suitable for horizontal or vertical applications.

- Frames:
- Hat-shaped, galvanized-steel channels, 0.064-inch minimum thickness.

Standard leakage rating, with linkage outside airstream.

- DUCT ACCESSORIES

B. Shop Drawings: For duct accessories. Include plans, elevations, sections, details and attachments to other work.

A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B,

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials,

material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free

Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts;

D. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter

Manufacturers: Subject to compliance with requirements, provide products by one of the following:.

1. Detail duct accessories fabrication and installation in ducts and other construction. Include dimensions,

weights, loads, and required clearances; and method of field assembly into duct systems and other

- Mitered and welded corners
- Flanges for attaching to walls and flangeless frames for installing in ducts.

b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper

blades and bearings at both ends of operating shaft.

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

D. Blade Axles: 1/2-inch- diameter; galvanized steel; blade-linkage hardware of zinc-plated steel and brass; ends

B. Description: Add-on or roll-formed, factory-fabricated, slide-on transverse flange connectors, gaskets, and

Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and

15820 - 2

- Multiple or single blade. b. Parallel- or opposed-blade design.
- Stiffen damper blades for stability Galvanized steel, 0.064 inch thick.
- Blade Axles: Galvanized steel.

8. Tie Bars and Brackets: Galvanized steel.

Galvanized steel channels, 0.064 inch thick.

Blade Edging: Closed-cell neoprene edging.

Multiple blade with maximum blade width of 8 inches.

Operating Temperature Range: From minus 40 to plus 200 deg F.

Oil-impregnated bronze or Stainless-steel sleeve.

bearings at both ends of operating shaft.

Thrust bearings at each end of every blade.

Nexus PDQ; Division of Shilco Holdings Inc.

Ward Industries, Inc.; a division of Hart & Cooley, Inc.

Mitered and welded corners.

Parallel- and opposed-blade design.

Greenheck Fan Corporation

CONTROL DAMPERS

Duro Dyne Inc.

McGill AirFlow LLC.

METALAIRE, Inc.

Nailor Industries Inc

Hat, U, or Angle shaped.

Ruskin Company.

Galvanized steel.

0.064 inch thick

2.3 FLANGE CONNECTORS

components.

DUCT ACCESSORIES

C. Material: Galvanized steel

sealed against blade bearings.

Ductmate Industries, Inc.

B. Frames:

E. Bearings:

- 3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-3, "Vanes and Vane Runners," and Figure 2-4, Bearings: Oil-impregnated bronze or Stainless-steel sleeve.
- Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Figure 2-2, "Rectangular Elbows."

Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.

3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-3, "Vanes and Vane Runners," and Figure 2-4,

Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.

"Vane Support in Elbows."

"Vane Support in Elbows."

Velocity 1500 fpm or Higher:

Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.

1) Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.

- c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-3, "Vanes and Vane Runners," and Figure 2-4, "Vane Support in Elbows."
- Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Figure 3-3, "Round Duct Elbows."
- Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.
 - Velocity 1000 fpm or Lower: 0.5 radius-to-diameter ratio and three segments for 90degree elbow. 2) Velocity 1000 to 1500 fpm: 1.0 radius-to-diameter ratio and four segments for 90-
 - 3) Velocity 1500 fpm or Higher: 1.5 radius-to-diameter ratio and five segments for 90-
- degree elbow. Radius-to Diameter Ratio: 1.5.
- Round Elbows, 12 Inches and Smaller in Diameter: Stamped or pleated.
- Round Elbows, 14 Inches and Larger in Diameter: Standing seam.
- Branch Configuration
 - Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible," Figure 2-6, "Branch Connections."
 - Rectangular Main to Rectangular Branch: 45-degree entry
 - Rectangular Main to Round Branch: Spin in.
 - Round: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible." Figure 3-4, "90 Degree Tees and Laterals," and Figure 3-5, "Conical Tees." Saddle taps are permitted in existing duct.
 - Velocity 1000 fpm or Lower: 90-degree tap.
 - Velocity 1000 to 1500 fpm: Conical tap.
- Velocity 1500 fpm or Higher: 45-degree lateral.
- END OF SECTION 15815

- D. Gage and Shape: Match connecting ductwork. 2.4 TURNING VANES

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- Manufacturers: Subject to compliance with requirements, provide products by one of the following: Ductmate Industries, Inc.
- Duro Dyne Inc.
- METALAIRE, Inc. SEMCO Incorporated.
- Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
- Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-
- C. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible"; Figures 2-3, "Vanes and Vane Runners," and 2-4, "Vane Support in Elbows." D. Vane Construction: Single wall.
- 2.5 DUCT-MOUNTED ACCESS DOORS
- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- Ductmate Industries, Inc.
- Flexmaster U.S.A., Inc. Greenheck Fan Corporation
- McGill AirFlow LLC.
- Nailor Industries Inc. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Duct-Mounted Access Doors: Fabricate access panels according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 2-10, "Duct Access Doors and Panels," and 2-11, "Access Panels - Round
- Duct." Door:
- Double wall, rectangular.
- Galvanized sheet metal with insulation fill and thickness as indicated for duct pressure class.
- d. Hinges and Latches: 1-by-1-inch butt or piano hinge and cam latches.
- Fabricate doors airtight and suitable for duct pressure class.
- Frame: Galvanized sheet steel, with bend-over tabs and foam gaskets.
- Number of Hinges and Locks: a. Access Doors Less Than 12 Inches Square: No hinges and two sash locks.
- b. Access Doors up to 18 Inches Square: Two hinges and two sash locks.
- DUCT ACCESS PANEL ASSEMBLIES Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- Ductmate Industries, Inc.
- Flame Gard, Inc.
- Labeled according to UL 1978 by an NRTL. C. Panel and Frame: Minimum thickness 0.0528-inch carbon steel.
- D. Fasteners: Carbon steel. Panel fasteners shall not penetrate duct wall.
- E. Gasket: Comply with NFPA 96; grease-tight, high-temperature ceramic fiber, rated for minimum 2000 deg F. F. Minimum Pressure Rating: 10-inch wg, positive or negative.
- 2.7 FLEXIBLE DUCTS
- Manufacturers: Subject to compliance with requirements, provide products by one of the following: DUCT ACCESSORIES

- McGill AirFlow LLC.

Atco.

- Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Insulated, Flexible Duct: UL 181, Class 1, black polymer film supported by helically wound, spring-steel wire; fibrous-glass insulation; aluminized vapor-barrier film.
 - Pressure Rating: at least 4-inch wg positive and at least 0.5-inch wg negative.
- Maximum Air Velocity: at least 4000 fpm
- Temperature Range: Minus 20 to plus 175 deg F.
- Insulation R-Value: 6. 5. UL rated with flame spread index no more than 25 and a smoke developed index no more than 50 per ASTM
- C. Flexible Duct Connectors:
- Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action in sizes 3 through 18 inches, to suit duct size.
- DUCT ACCESSORY HARDWARE
- A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.
- Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.
- PART 3 EXECUTION 3.1 INSTALLATION
- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass
- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and
- fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and
- terminate liner with nosing at hat channel. Install steel volume dampers in steel ducts.
- Install aluminum volume dampers in aluminum ducts
- Set dampers to fully open position before testing, adjusting, and balancing.
- E. Install test holes at fan inlets and outlets and elsewhere as indicated.

At outdoor-air intakes and mixed-air plenums.

- F. Install fire and smoke dampers according to UL listing. G. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and
- At drain pans and seals. Downstream from control dampers and equipment.

equipment at the following locations:

4. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure relief access doors; and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors

installed downstream from dampers.

- Upstream from turning vanes.
- Control devices requiring inspection. Elsewhere as indicated.
- Install access doors with swing against duct static pressure. Access Door Sizes:
- One-Hand or Inspection Access: 8 by 5 inches
- Two-Hand Access: 12 by 6 inches.
- DUCT ACCESSORIES
- J. Label access doors according to Division 15 Section "Identification for HVAC Piping and Equipment" to indicate the purpose of access door.
- Install flexible connectors to connect ducts to equipment.

- Install duct test holes where required for testing and balancing purposes.
- 3.2 FIELD QUALITY CONTROL A. Tests and Inspections:
 - Inspect locations of access doors and verify that purpose of access door can be performed. 3. Operate fire and smoke dampers to verify full range of movement and verify that proper heat-response device
- Inspect turning vanes for proper and secure installation.

L. For fans developing static pressures of 5-inch wg and more, cover flexible connectors with loaded vinyl sheet held in

15820 - 4

- M. Connect terminal units to supply ducts with maximum 12-inch lengths of flexible duct. Do not use flexible ducts to
- N. Connect diffusers to ducts with maximum 72-inch lengths of flexible duct clamped or strapped in place. Connect flexible ducts to metal ducts with draw bands.
- Operate dampers to verify full range of movement.

END OF SECTION 15820

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ATLANTA, GA 30303

PHASE 3 **VERTICAL TRANSPORTATION**

SEAL

ATLANTA INTERNATIONAL **AIRPORT**

HARTSFIELD-JACKSON

MECHANICAL SPECIFICATIONS

NO. DATE BY REVISION

WBS NUMBER: DRAWN BY: H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: 6006007929 J. GILLESPIE ONSULTANT PROJECT NUMBE CHECKED BY: 07306.16 R. ANWAR REFERENCE NUMBER APPROVED BY: J. GILLESPIE DATE: 06.11.2014 SCALE: NONE SHEET NO:

15820 - 5

K:\07306.16 Vertical Transportation Phase 3_CADD\M0.0.8 MECH SPECIFICATIONS.dwg

DUCT ACCESSORIES

H. Capacities and Characteristics

POWER VENTILATORS

Refer to Schedule.

15838 - 2

"HVAC Instrumentation and Controls" and shall have the following features:

15840 - 1

Damper Actuator: 24 V, powered closed, spring return open.

AIR TERMINAL UNITS

2.3 MOTORS

HANGERS AND SUPPORTS A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts. B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with Steel Cables: Galvanized steel complying with ASTM A 603. D. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed E. Air Terminal Unit Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible F. Trapeze and Riser Supports: Steel shapes and plates for units with steel casings; aluminum for units with 2.3 SOURCE QUALITY CONTROL Factory Tests: Test assembled air terminal units according to AHRI 880. PART 3 - EXECUTION 3.1 INSTALLATION A. Install air terminal units according to NFPA 90A, "Standard for the Installation of Air Conditioning and B. Install air terminal units level and plumb. Maintain sufficient clearance for normal service and maintenance. Install wall-mounted thermostats. 3.2 HANGER AND SUPPORT INSTALLATION A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Hangers B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate Hangers Exposed to View: Threaded rod and angle or channel supports. D. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear Install piping adjacent to air terminal unit to allow service and maintenance AIR TERMINAL UNITS B. Hot-Water Piping: In addition to requirements in Division 15 Section "Hydronic Piping," connect heating C. Connect ducts to air terminal units according to Division 15 Section "Metal Ducts.". Make connections to air terminal units with flexible connectors complying with requirements in Division 15 IDENTIFICATION Label each air terminal unit with plan number, nominal airflow, and maximum and minimum factory-set 3.5 FIELD QUALITY CONTROL Perform tests and inspections. B. Tests and Inspections: After installing air terminal units and after electrical circuitry has been energized, test for compliance 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor C. Air terminal unit will be considered defective if it does not pass tests and inspections. Prepare test and inspection reports. 3.6 STARTUP SERVICE Engage a factory-authorized service representative to perform startup service. END OF SECTION 15840

sensor. Control devices shall be compatible with temperature controls specified in Division 15 Section

SECTION 15900 - HVAC INSTRUMENTATION AND CONTROLS 2. Terminal Unit Controller: Pressure-independent, variable-air-volume controller with electronic PART 1 - GENERAL airflow transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and

15840 - 2

15840 - 3

maximum air volumes, and having the following features:

Remote reset of airflow or temperature set points.

Adjusting and monitoring with portable terminal.

d. Communication with temperature-control system specified in Division 15 Section "HVAC

3. Room Sensor: Wall mounted, with temperature set-point adjustment and access for connection of

1. Label each air terminal unit with plan number, nominal airflow, maximum and minimum factory-set

Occupied and unoccupied operating mode.

Instrumentation and Controls.

threads painted with zinc-chromate primer after installation.

airflows, coil type and AHRI certification seal.

for construction materials to which hangers are being attached.

Where practical, install concrete inserts before placing concrete.

capacities appropriate for supported loads and building materials where used.

Install powder-actuated concrete fasteners after concrete is placed and completely cured.

3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes and for slabs more

Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes and for slabs less

coils to supply with shutoff valve, strainer, control valve, and union or flange; and to return with balancing

airflows. Comply with requirements in Division 15 Section "Identification for HVAC Piping and

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect

3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

2. Verify that inlet duct connections are as recommended by air terminal unit manufacturer to achieve

Complete installation and startup checks according to manufacturer's written instructions.

components, assemblies, and equipment installations, including connections, and to assist in testing.

for duct hanger service; with an automatic-locking and clamping device.

portable operator terminal

aluminum casings

and Supports."

valve and union or flange.

Section "Duct Accessories.

with requirements

proper performance.

AIR TERMINAL UNITS

rotation and unit operation.

Equipment" for equipment labels and warning signs and labels.

Verify that controls and control enclosure are accessible.

Verify that nameplate and identification tag are visible.

Verify that controls respond to inputs as specified.

Verify that control connections are complete.

1.1 SUMMARY

A. This Section includes control equipment for HVAC systems and components, including control components for terminal heating and cooling units not supplied with factory-wired controls.

B. See Division 15 Section "Sequence of Operation" for requirements that relate to this Section.

Control System Software: Schematic diagrams, written descriptions, and points list.

1.2 SUBMITTALS

Product Data: For each control device indicated.

B. Shop Drawings:

Power, signal, and control wiring diagrams.

Details of control panel faces.

DDC System Hardware: Wiring diagrams, schematic floor plans, and schematic control diagrams.

C. Software and firmware operational documentation.

 D. Operation and maintenance data. QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

 Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers

2.2 CONTROL SYSTEM A. Manufacturers:

Johnson Controls, Inc.; Controls Group.

B. Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, and accessories to control mechanical systems.

C. Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, accessories, and software connected to distributed controllers operating in multiuser, multitasking environment on token-passing network and programmed to control mechanical systems. An operator workstation permits interface with the network via dynamic color graphics with each mechanical system, building floor plan, and control device depicted by point-and-click graphics.

A. Control Units: Modular, comprising processor board with programmable, nonvolatile, random-access memory; local operator access and display panel; integral interface equipment; and backup power source.

1. Units monitor or control each I/O point; process information; execute commands from other control units, devices, and operator stations; and download from or upload to operator workstation.

2. Stand-alone mode control functions operate regardless of network status. Functions include the following:

Global communications.

b. Discrete/digital, analog, and pulse I/O.

Monitoring, controlling, or addressing data points.

d. Software applications, scheduling, and alarm processing.

HVAC INSTRUMENTATION AND CONTROLS

15900 - 1

e. Testing and developing control algorithms without disrupting field hardware and controlled B. Local Control Units: Modular, comprising processor board with electronically programmable, nonvolatile, read-

only memory; and backup power source. 1. Units monitor or control each I/O point, process information, and download from or upload to operator

workstation or diagnostic terminal unit

Stand-alone mode control functions operate regardless of network status. Functions include the following:

Global communications.

Discrete/digital, analog, and pulse I/O

Monitoring, controlling, or addressing data points.

Local operator interface provides for download from or upload to operator workstation.

C. I/O Interface: Hardwired inputs and outputs may tie into system through controllers. Protect points so that shorting will cause no damage to controllers.

Binary Inputs: Allow monitoring of on-off signals without external power.

Pulse Accumulation Inputs: Accept up to 10 pulses per second.

3. Analog Inputs: Allow monitoring of low-voltage (0- to 10-V dc), current (4 to 20 mA), or resistance signals. 4. Binary Outputs: Provide on-off or pulsed low-voltage signal, selectable for normally open or normally closed

operation with three-position (on-off-auto) override switches and status lights. Analog Outputs: Provide modulating signal, either low voltage (0- to 10-V dc) or current (4 to 20 mA) with

status lights, two-position (auto-manual) switch, and manually adjustable potentiometer.

6. Tri-State Outputs: Provide two coordinated binary outputs for control of three-point, floating-type electronic

Universal I/Os: Provide software selectable binary or analog outputs.

D. Power Supplies: Transformers with Class 2 current-limiting type or overcurrent protection; limit connected loads to 80 percent of rated capacity. DC power supply shall match output current and voltage requirements and be full-

wave rectifier type with the following:

Output ripple of 5.0 mV maximum peak to peak.

Combined 1 percent line and load regulation with 100-mic.sec. response time for 50 percent load changes. 3. Built-in overvoltage and overcurrent protection and be able to withstand 150 percent overload for at least 3

seconds without failure.

E. Power Line Filtering: Internal or external transient voltage and surge suppression for workstations or controllers with the following:

Minimum dielectric strength of 1000 V.

Maximum response time of 10 nanoseconds. Minimum transverse-mode noise attenuation of 65 dB.

Minimum common-mode noise attenuation of 150 dB at 40 to 100 Hz.

UNITARY CONTROLLERS

A. Unitized, capable of stand-alone operation with sufficient memory to support its operating system, database, and programming requirements, and with sufficient I/O capacity for the application.

 Configuration: Local keypad and display; diagnostic LEDs for power, communication, and processor; wiring termination to terminal strip or card connected with ribbon cable; memory with bios; and [72] <Insert number>-hour battery backup

15900 - 2

Operating System: Manage I/O communication to allow distributed controllers to share real and virtual object information and allow central monitoring and alarms. [Perform scheduling with real-time clock.]Perform automatic system diagnostics; monitor system and report failures.

Enclosure: Dustproof rated for operation at 32 to 120 deg F (0 to 50 deg C).

HVAC INSTRUMENTATION AND CONTROLS

SEAL PHASE 3 **VERTICAL TRANSPORTATION**

CITY OF ATLANTA. GEORGIA

Atlanta International Airport

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HARTSFIELD-JACKSON ATLANTA INTERNATIONAL **AIRPORT**

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NO.	DATE	BY	REVISION	
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MECHANICAL SPECIFICATIONS

WBS NUMBER: DRAWN BY: H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: 6006007929 J. GILLESPIE DNSULTANT PROJECT NUMBE CHECKED BY: 07306.16 R. ANWAR REFERENCE NUMBER APPROVED BY: J. GILLESPIE DATE: 06.11.2014 SCALE: NONE SHEET NO: M0.0.9

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- 2.5 ANALOG CONTROLLERS
- A. Step Controllers: 6- or 10-stage type, with heavy-duty switching rated to handle loads and operated by electric
- B. Electric, Outdoor-Reset Controllers: Remote-bulb or bimetal rod-and-tube type, proportioning action with adjustable throttling range, adjustable set point, scale range minus 10 to plus 70 deg F (minus 23 to plus 21 deg C),
- C. Electronic Controllers: Wheatstone-bridge-amplifier type, in steel enclosure with provision for remote-resistance readjustment. Identify adjustments on controllers, including proportional band and authority.
- 1. Single controllers can be integral with control motor if provided with accessible control readjustment
- A. Description: Vibration and corrosion resistant; for wall, immersion, or duct mounting as required.
- - e. MAMAC Systems, Inc.
- RDF Corporation.
- 2. Accuracy: Plus or minus 0.5 deg F (0.3 deg C)] at calibration point.
- Wire: Twisted, shielded-pair cable.
- Insertion Elements in Ducts: Single point, 8 inches (200 mm).
- 5. Room Sensor Cover Construction: Manufacturer's standard locking covers.
- Set-Point Adjustment: Concealed.
- Set-Point Indication:Concealed.
- c. Thermometer: Concealed.
- d. Orientation: Horizontal.
- C. RTDs and Transmitters:
- Manufacturers: BEC Controls Corporation.
- MAMAC Systems, Inc.
- RDF Corporation. Accuracy: Plus or minus 0.2 percent at calibration point.
- Wire: Twisted, shielded-pair cable.
- 4. Insertion Elements in Ducts: Single point, [8 inches (200 mm)] long; use where not affected by temperature
- stratification or where ducts are smaller than 9 sq. ft. (0.84 sq. m). Room Sensor Cover Construction: Manufacturer's standard locking covers.
- Set-Point Adjustment: Concealed].
- Set-Point Indication: Concealed.
- Thermometer: Concealed.
- d. Orientation: Horizontal.
- D. Room Sensor Cover Construction: Manufacturer's standard locking covers.

HVAC INSTRUMENTATION AND CONTROLS

15900 - 3

Set-Point Adjustment: Exposed

- Set-Point Indication: Concealed.
- Thermometer: Concealed.
- E. Room sensor accessories include the following: Insulating Bases: For sensors located on exterior walls.
 - 2. Adjusting Key: As required for calibration and cover screws.
- 2.7 STATUS SENSORS
- Current Switches: Self-powered, solid-state with adjustable trip current, selected to match current and system output
- Manufacturers:
- requirements

a. Opposed-Blade Damper with Edge Seals: 5 inch-lb/sq. ft. (62 kg-cm/sq. m) of damper.

- BEC Controls Corporation.
- I.T.M. Instruments Inc. 2.8 ACTUATORS
- Electronic Actuators: Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque. Manufacturers:
- - Belimo Aircontrols (USA), Inc.
- Dampers: Size for running torque calculated as follows:
- Coupling: V-bolt and V-shaped, toothed cradle.
- 4. Overload Protection: Electronic overload or digital rotation-sensing circuitry. Fail-Safe Operation: Mechanical, spring-return mechanism.
- Power Requirements (Two-Position Spring Return): 24-V ac.
- Temperature Rating: Minus 22 to plus 122 deg F. 8. Temperature Rating (Smoke Dampers): Minus 22 to plus 250 deg F.
- Run Time: 60 seconds.
- 2.9 DAMPERS
- A. Manufacturers:
- Air Balance Inc
- Don Park Inc.; Autodamp Div.
- TAMCO (T. A. Morrison & Co. Inc.).
- United Enertech Corp.
- B. Dampers: AMCA-rated, opposed-blade design; 0.108-inch- minimum thick, galvanized-steel or 0.125-inchminimum thick, extruded-aluminum frames with holes for duct mounting; damper blades shall not be less than 0.064-inch-thick galvanized steel with maximum blade width of 8 inches and length of 48 inches.
- 1. Secure blades to 1/2-inch- diameter, zinc-plated axles using zinc-plated hardware, with oil-impregnated sintered bronze blade bearings, blade-linkage hardware of zinc-plated steel and brass, ends sealed against spring-stainless-steel blade bearings, and thrust bearings at each end of every blade.
- Operating Temperature Range: From minus 40 to plus 200 deg F.
- 3. Edge Seals, Standard Pressure Applications: Closed-cell neoprene.
- 2.10 CONTROL CABLE
- A. Electronic and fiber-optic cables for control wiring are specified in Division 16 Section "Voice and Data Communication Cabling."
- HVAC INSTRUMENTATION AND CONTROLS 15900 - 4

PART 3 - EXECUTION

- 3.1 INSTALLATION
- Verify location of thermostats, and other exposed control sensors with Drawings and room details before installation. Install devices 48 inches (1220 mm)]
- B. Install automatic dampers according to Division 15 Section "Duct Accessories."
- Install damper motors on outside of duct in warm areas, not in locations exposed to outdoor temperatures.
- D. Install labels and nameplates to identify control components according to Division 15 Section "Mechanical Identification.
- Install duct volume-control dampers according to Division 15 Sections specifying air ducts.
- 3.2 ELECTRICAL WIRING AND CONNECTION INSTALLATION
- Install raceways, boxes, and cabinets according to Division 16 Section "Raceways and Boxes."
- B. Install building wire and cable according to Division 16 Section "Conductors and Cables."
- C. Install signal and communication cable according to Division 16 Section "Voice and Data Communication Cabling."
- Conceal cable, except in mechanical rooms and areas where other conduit and piping are exposed. Install exposed cable in raceway.
- Install concealed cable in raceway.

individual room control cables

- 4. Bundle and harness multiconductor instrument cable in place of single cables where several cables follow a common path.
- 5. Fasten flexible conductors, bridging cabinets and doors, along hinge side; protect against abrasion. Tie and
- Number-code or color-code conductors for future identification and service of control system, except local
- 7. Install wire and cable with sufficient slack and flexible connections to allow for vibration of piping and

Connect hand-off-auto selector switches to override automatic interlock controls when switch is in hand position.

- 3.3 FIELD QUALITY CONTROL A. Perform the following field tests and inspections and prepare test reports:
 - 1. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove and replace malfunctioning units and retest.

 - Test and adjust controls and safeties. 3. Test calibration of controllers by disconnecting input sensors and stimulating operation with compatible signal
 - 4. Test each point through its full operating range to verify that safety and operating control set points are as
 - 5. Test each control loop to verify stable mode of operation and compliance with sequence of operation. Adjust

 - 6. Test each system for compliance with sequence of operation. Test software and hardware interlocks.
 - DDC Verification:
 - 1. Verify that instruments are installed before calibration, testing, and loop or leak checks.
 - Check instruments for proper location and accessibility
 - 3. Check instrument installation for direction of flow, elevation, orientation, insertion depth, and other applicable
 - Check instrument tubing for proper fittings, slope, material, and support.

HVAC INSTRUMENTATION AND CONTROLS

- Check temperature instruments and material and length of sensing elements.
- 7. Check air-operated dampers. Verify that pressure gages are provided and that proper blade alignment, either parallel or opposed, has been provided.

15900 - 5

- Check DDC system as follows:
 - Verify that DDC controller power supply is from emergency power supply, if applicable.

5. Check pressure instruments, piping slope, installation of valve manifold, and self-contained pressure

- b. Verify that wires at control panels are tagged with their service designation and approved tagging
- Verify that spare I/O capacity has been provided.
- Verify that DDC controllers are protected from power supply surges.
- Replace damaged or malfunctioning controls and equipment and repeat testing procedures.
- 3.4 DEMONSTRATION

END OF SECTION 15900

SECTION 15950 - TESTING, ADJUSTING, AND BALANCING

- PART 1 GENERAL
- 1.1 SUMMARY A. Section Includes:
- Balancing Air Systems:
- Constant-volume air systems.
- 1.2 DEFINITIONS
- NEBB: National Environmental Balancing Bureau.
- B. TAB: Testing, adjusting, and balancing.
- TABB: Testing, Adjusting, and Balancing Bureau.
- TAB Specialist: An entity engaged to perform TAB Work.
- 1.3 SUBMITTALS
- Certified TAB reports.
- 1.4 QUALITY ASSURANCE
- TAB Contractor Qualifications: Engage a TAB entity certified by NEBB
- TAB Field Supervisor: Employee of the TAB contractor and certified by NEBB. TAB Technician: Employee of the TAB contractor and who is certified by NEBB as a TAB technician.
- B. Certify TAB field data reports and perform the following:
- Review field data reports to validate accuracy of data and to prepare certified TAB reports. 2. Certify that the TAB team complied with the approved TAB plan and the procedures specified and referenced
- C. TAB Report Forms: Use standard TAB contractor's forms. D. Instrumentation Type, Quantity, Accuracy, and Calibration: As described in ASHRAE 111, Section 5,
- PART 2 PRODUCTS (Not Applicable)

in this Specification.

- PART 3 EXECUTION
- 3.1 EXAMINATION
- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment...
- Examine the approved submittals for HVAC systems and equipment.
- C. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment
- Examine equipment performance data including fan curves.
- 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
- Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.

15950 - 1

- Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- F. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, and equipment with
- functioning controls is ready for operation. G. Examine operating safety interlocks and controls on HVAC equipment.

H. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system

reactions to changes in conditions. Record default set points if different from indicated values.

- 3.2 PREPARATION A. Complete system-readiness checks and prepare reports. Verify the following:
 - Permanent electrical-power wiring is complete.
- Automatic temperature-control systems are operational. Doors can be closed so indicated conditions for system operations can be met.
- GENERAL PROCEDURES FOR TESTING AND BALANCING
- Perform testing and balancing procedures on each system according to the procedures contained in NEBB's "Procedural Standards for Testing, Adjusting, and in this Section.
- Comply with requirements in ASHRAE 62.1-2010, Section 7.2.2, "Air Balancing." Take and report testing and balancing measurements in inch-pound (IP) units.
- 3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS A. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- Verify that motor starters are equipped with properly sized thermal protection. Check dampers for proper position to achieve desired airflow path.

TESTING, ADJUSTING, AND BALANCING

- D. Check for airflow blockages.
- 3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS
- A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.
- Measure total airflow. Measure fan static pressures as follows to determine actual static pressure:
- a. Measure outlet static pressure as far downstream from the fan as practical and upstream from restrictions in ducts such as elbows and transitions. Measure static pressure directly at the fan outlet or through the flexible connection.
- 3. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other airhandling and -treating equipment.
- 4. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions. 5. Obtain approval from for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in Division 15 Sections for air-handling units for adjustment of fans, belts, and pulley sizes to
- achieve indicated air-handling-unit performance. 6. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload will occur. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to
- determine the maximum required brake horsepower. 3.6 PROCEDURES FOR CONDENSING UNITS
- Verify proper rotation of fans.
- C. Record compressor data.
- 3.7 TOLERANCES A. Set HVAC system's air flow rates within the following tolerances:

B. Measure entering- and leaving-air temperatures.

- Ventilation Fans: Plus or minus 10 percent. 3.8 REPORTING
- 3.9 FINAL REPORT

A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems

- 1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
- Include a list of instruments used for procedures, along with proof of calibration.
- B. General Report Data: In addition to form titles and entries, include the following data:
- Title page.
- Name and address of the TAB contractor.
- Project name. Project location.
- Architect's name and address
- Engineer's name and address
- Contractor's name and address.
- Report date. Signature of TAB supervisor who certifies the report.
- 10. Table of Contents with the total number of pages defined for each section of the report. Number each page in
- Summary of contents including the following:
- Notable characteristics of systems.

Indicated versus final performance.

Nomenclature sheets for each item of equipment. 13. Notes to explain why certain final data in the body of reports vary from indicated values.

Description of system operation sequence if it varies from the Contract Documents.

Test conditions for fans and performance forms including the following: Fan drive settings including settings and percentage of maximum pitch diameter.

 Other system operating conditions that affect performance. END OF SECTION 15950

TESTING. ADJUSTING. AND BALANCING 15950 - 3



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SEAL PHASE 3 **VERTICAL TRANSPORTATION**

ATLANTA INTERNATIONAL **AIRPORT**

NO. | DATE | BY | REVISION

MECHANICAL

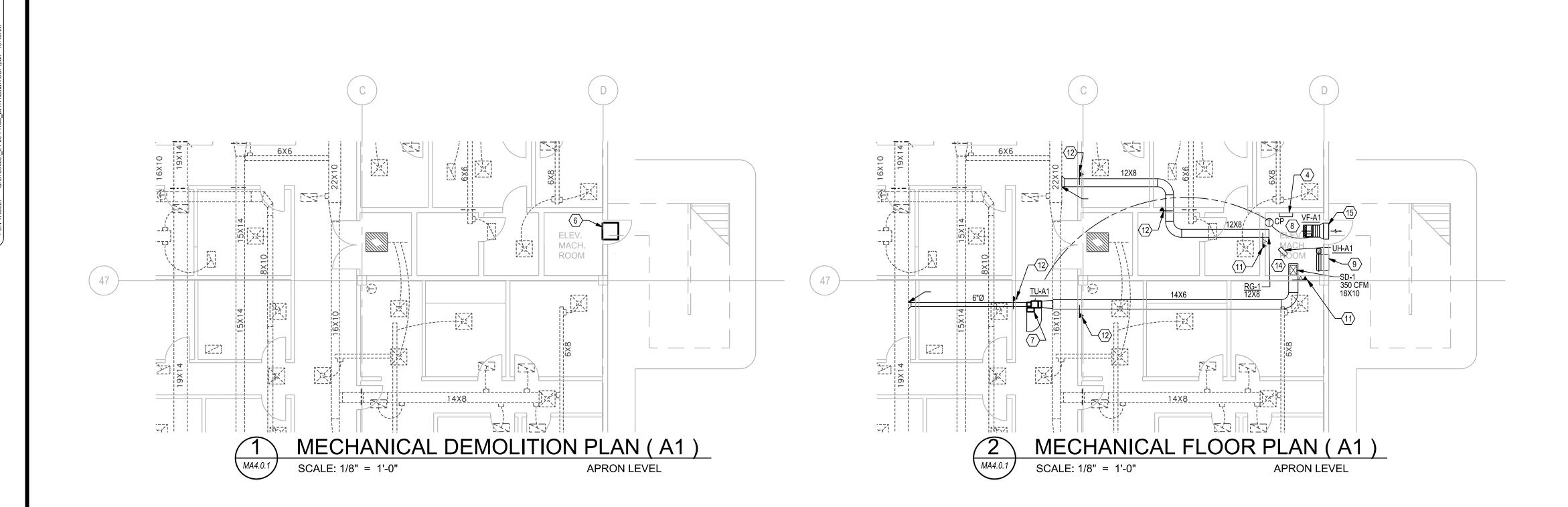
SPECIFICATIONS

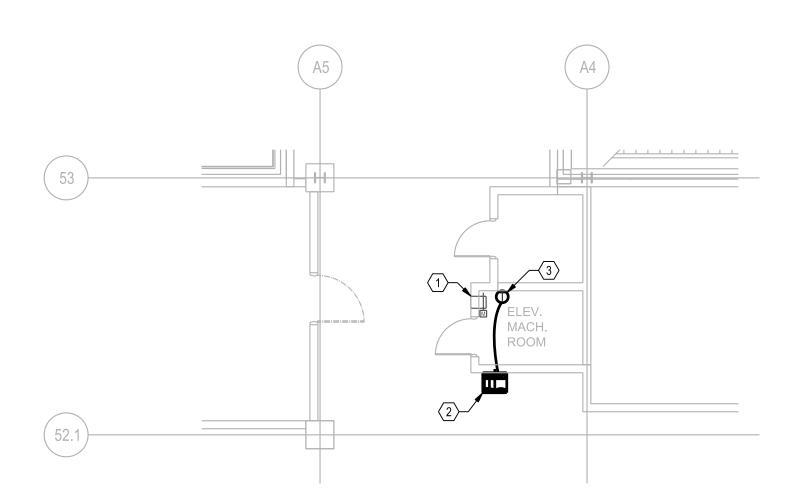
HARTSFIELD-JACKSON

WBS NUMBER: DRAWN BY: H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: 6006007929 J. GILLESPIE ONSULTANT PROJECT NUMBEI CHECKED BY: 07306.16 R. ANWAR REFERENCE NUMBER APPROVED BY: J. GILLESPIE DATE: 06.11.2014 SCALE: NONE SHEET NO:

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HVAC INSTRUMENTATION AND CONTROLS 15900 - 6 TESTING, ADJUSTING, AND BALANCING 15950 - 2 M0.1.0

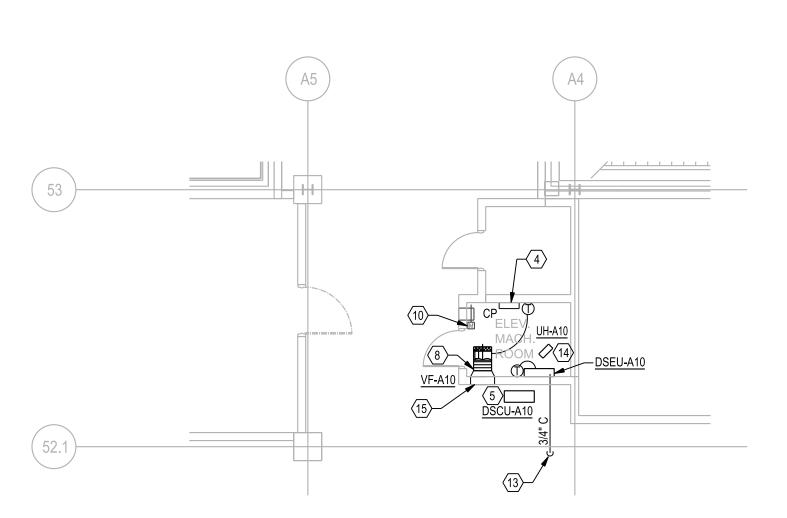




MECHANICAL DEMOLITION PLAN (A10)

SCALE: 1/8" = 1'-0"

APRON LEVEL



MECHANICAL FLOOR PLAN (A10)

SCALE: 1/8" = 1'-0"

APRON LEVEL

GENERAL NOTES

- 1. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗵

- I. EXISTING MOTOR OPERATED DAMPER TO REMAIN.
 CONTRACTOR TO VERIFY FUNCTIONALITY AND
 RESTORE AS REQUIRED. DEMOLISH EXISTING
 ELECTRIC ACTUATOR. COORDINATE DEMOLITION WITH
 ELECTRICAL DRAWINGS.
- DEMOLISH EXISTING EXHAUST FAN. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 3. DEMOLISH LINE VOLTAGE THERMOSTAT. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 4. PROVIDE DDC CONTROL PANEL.
- 5. NEW DUCTLESS SPLIT SYSTEM. PROVIDE AND INSTALL REFRIGERANT PIPING, THERMOSTAT, AND CONDENSATE PIPING.
- 6. DEMOLISH EXISTING ROOM AIR CONDITIONING UNIT. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 7. NEW SINGLE DUCT TERMINAL UNIT.
- 8. NEW VENTILATION FAN.
- 9. NEW MAKE UP AIR LOUVER WITH MOTOR OPERATED DAMPER. LOUVER TO BE 24X24 NOMINAL SIZE AND 1.5 SQUARE FOOT MINIMUM FREE AREA.

10. PROVIDE NEW ELECTRONIC DAMPER ACTUATOR.

11.NEW FIRE SMOKE DAMPER.

12.NEW FIRE DAMPER.

13.3/4" CONDENSATE FROM EVAPORATOR UNIT, THROUGH WALL, AND TERMINATE PAST SIDEWALK. PROVIDE TRIP HAZZARD COVER.

14. NEW UNIT HEATER SUSPENDED FROM STRUCTURE.
COORDINATE ALL MANUFACTURER SPECIFIED
SERVICE AND OPERATIONAL CLEARANCES WITH
INSTALLATION.

15. NEW EXTERIOR LOUVER. PROVIDE TRANSITION DUCTWORK FROM FAN TO LOUVER. LOUVER TO BE 24X24 NOMINAL SIZE AND 1.5 SQUARE FOOT MINIMUM FREE AREA.



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PHASE 3
VERTICAL
TRANSPORTATION

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

NO. DATE BY REVISION

CONCOURSE 'A'
APRON LEVEL
MECHANICAL

DEMOLITION /

NEW FLOOR PLAN

WBS NUMBER:
H.03.90.202

FC NUMBER:
6006007929

CONSULTANT PROJECT NUMBER:
07306.16

REFERENCE NUMBER

ELEVATOR

A1

DRAWN BY:
J. GILLESPIE

CHECKED BY:
R. ANWAR

APPROVED BY:
J. GILLESPIE

DATE:
06.11.2014

SCALE:
1/8" = 1'-0"

A10

SHEET NO:

MA4.0.1



MECHANICAL FLOOR PLAN
APRON LEVEL(A6, A7, AND A8)

SCALE: 1/8" = 1'-0"

APRON LEVEL

ONORTH

GENERAL NOTES

- 1. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗵

- 1. EXISTING MOTOR OPERATED DAMPER TO REMAIN.
 CONTRACTOR TO VERIFY FUNCTIONALITY AND
 RESTORE AS REQUIRED. DEMOLISH EXISTING
 ELECTRIC ACTUATOR. COORDINATE DEMOLITION WITH
 ELECTRICAL DRAWINGS.
- 2. DEMOLISH EXISTING EXHAUST FAN. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 3. DEMOLISH LINE VOLTAGE THERMOSTAT. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 4. PROVIDE DDC CONTROL PANEL.
- 5. NEW DUCTLESS SPLIT SYSTEM. PROVIDE AND INSTALL REFRIGERANT PIPING, THERMOSTAT, AND CONDENSATE PIPING.
- 6. NEW VENTILATION FAN.
- . NEW MAKE UP AIR LOUVER WITH MOTOR OPERATED DAMPER. LOUVER TO BE 24X24 WITH A MIINIMUM FREE AREA OF 1.5 SQUARE FEET.
- 8. PROVIDE NEW ELECTRONIC DAMPER ACTUATOR.
- 9. 3/4" CONDENSATE FROM EVAPORATOR UNIT, THROUGH WALL, AND TERMINATE PAST SIDEWALK. PROVIDE TRIP HAZZARD COVER.
- 10. NEW UNIT HEATER SUSPENDED BY WALL BRACKET. COORDINATE ALL MANUFACTURER SPECIFIED SERVICE AND OPERATIONAL CLEARANCES WITH INSTALLATION.
- 11.EVAPORATOR UNIT INSTALLED BELOW AND MOUNTED TO WALL.
- 12. PROVIDE NEW EXTERIOR LOUVER. TRANSITION DUCTWORK BETWEEN LOUVER AND FAN. LOUVER TO BE 24X24 WITH A MINIMUM FREE AREA OF 1.5 SQUARE FEET.



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PHASE 3
VERTICAL
TRANSPORTATION

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

NO. DATE BY REVISION

CONCOURSE 'A'
APRON LEVEL
MECHANICAL
DEMOLITION /
NEW FLOOR PLAN

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WBS NUMBER: H.03.90.202	<i>DRAWN BY:</i> J. GILLESPIE
FC NUMBER: 6006007929	<i>DESIGNED BY:</i> J. GILLESPIE
CONSULTANT PROJECT NUMBER: 07306.16	CHECKED BY: R. ANWAR
REFERENCE NUMBER	APPROVED BY: J. GILLESPIE
ELEVATOR	DATE: 06.11.2014
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A6
A7
A8

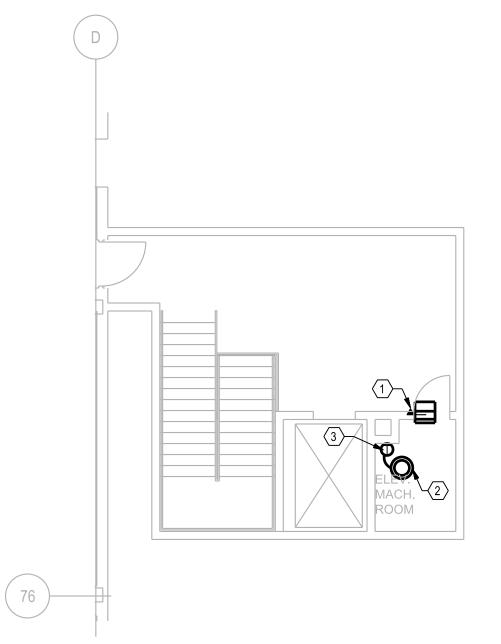
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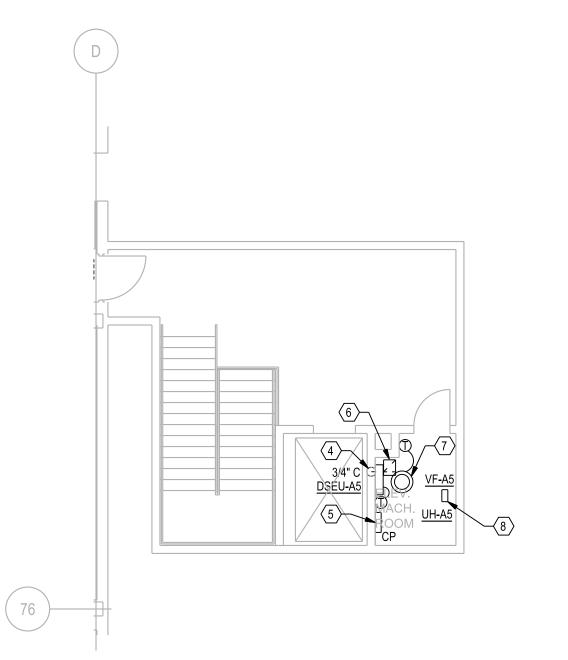
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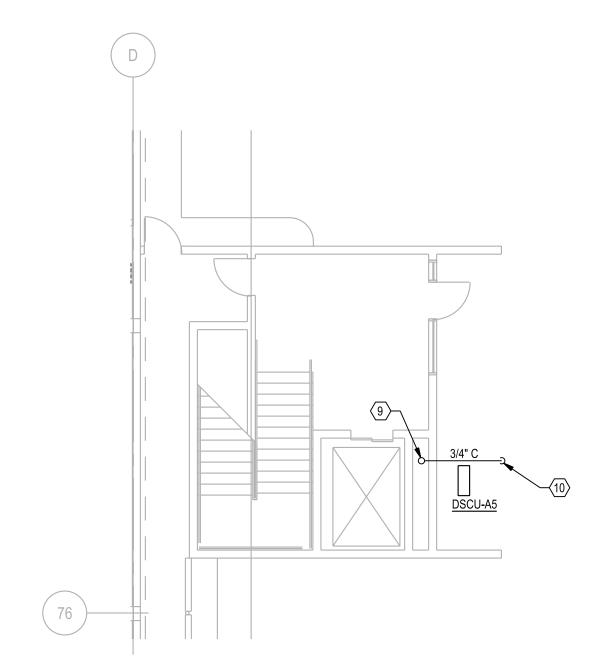




MECHANICAL FLOOR PLAN (A5) **BOARDING LEVEL** SCALE: 1/8" = 1'-0"

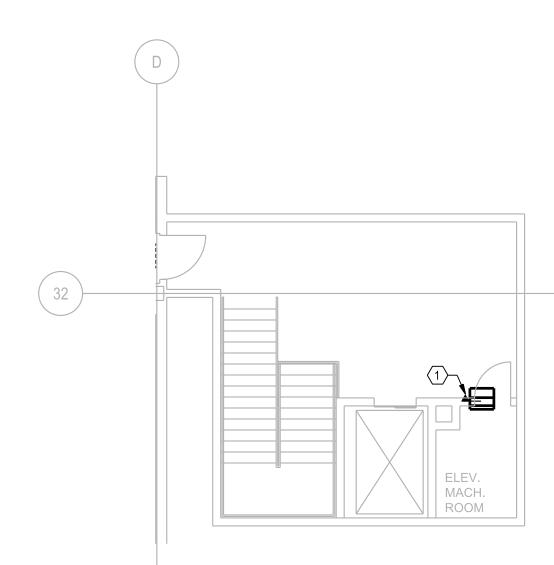
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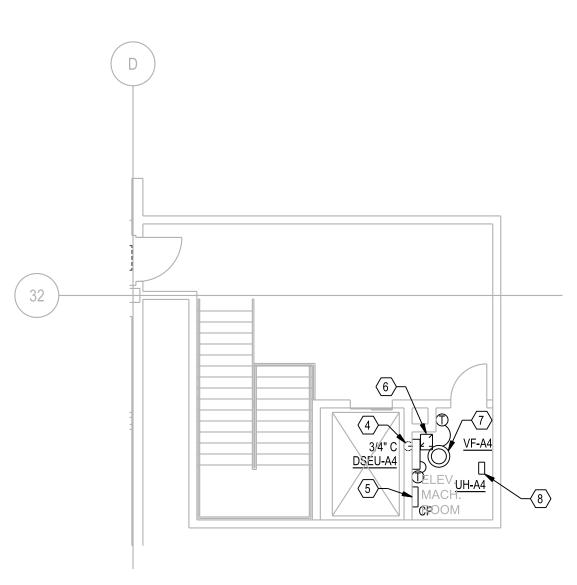


3 MECHANICAL FLOOR PLAN (A5) APRON LEVEL SCALE: 1/8" = 1'-0"

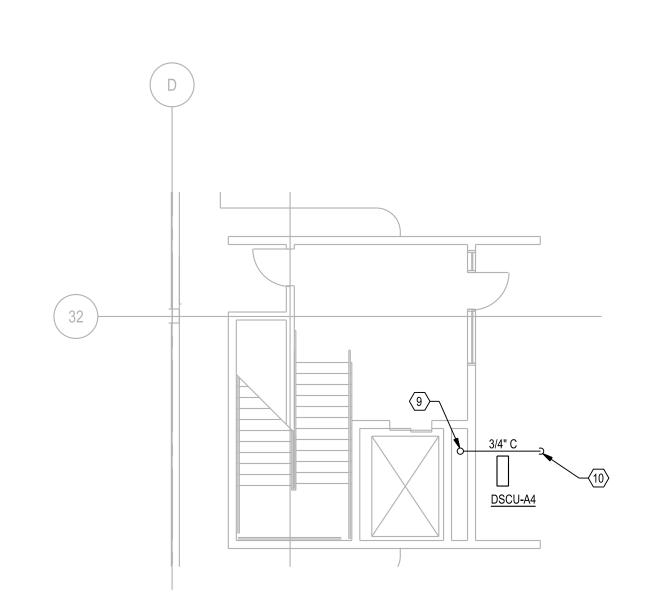
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MECHANICAL DEMOLITION PLAN (A4) SCALE: 1/8" = 1'-0" **BOARDING LEVEL**



MA4.1.1 MECHANICAL FLOOR PLAN (A4) SCALE: 1/8" = 1'-0" **BOARDING LEVEL**



MECHANICAL FLOOR PLAN (A4) SCALE: 1/8" = 1'-0" APRON LEVEL



GENERAL NOTES

- . CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗵

- . DEMOLISH EXISTING FIRE DAMPER AND TRANSFER AIR DUCT. IN FILL THE OPENING IN WALL TO MAINTAIN THE FIRE RATING.
- 2. DEMOLISH EXISTING EXHAUST FAN. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS..
- 3. DEMOLISH EXISTING LINE VOLTAGE THERMOSTAT. COORDINATE DEMOLITION WITH ELECTRICAL
- 4. 3/4" CONDENSATE PIPING DOWN IN WALL TO LEVEL BELOW.
- 5. NEW DDC CONTROL PANEL.
- 6. 12X12 MAKE UP AIR OPENING THROUGH SLAB WITH GRAVITY DAMPER AND LOUVER. PROVIDE 12X12 DUCT EXTENSION AND DISCHARGE HORIZONTAL.
- 7. NEW VENTILATION FAN. 12"X12" INLET DUCT WITH GRAVITY DAMPER AT TOP OF DUCT.
- 8. NEW UNIT HEATER SUSPENDED BY WALL BRACKET. COORDINATE ALL MANUFACTURER SPECIFIED SERVICE AND OPERATIONAL CLEARANCES WITH INSTALLATION.
- 9. 3/4" CONDENSATE DOWN FROM LEVEL ABOVE.
- 10.3/4" CONDENSATE DISCHARGE, TERMINATE PAST SIDEWALK, AND PROVIDE TRIP HAZZARD COVER.



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PHONE: 404.688.2200 FAX: 404.688.2400

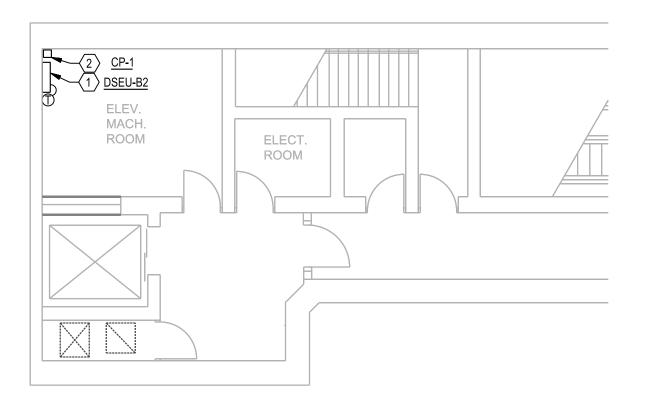
PHASE 3 **VERTICAL TRANSPORTATION**

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL **AIRPORT**

NO. DATE BY REVISION CONCOURSE 'A' **BOARDING LEVEL MECHANICAL DEMOLITION /**

NEW FLOOR PLAN WBS NUMBER: H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: J. GILLESPIE ONSULTANT PROJECT NUMBER CHECKED BY: 07306.16 REFERENCE NUMBER APPROVED BY: J. GILLESPIE **ELEVATOR** 06.11.2014

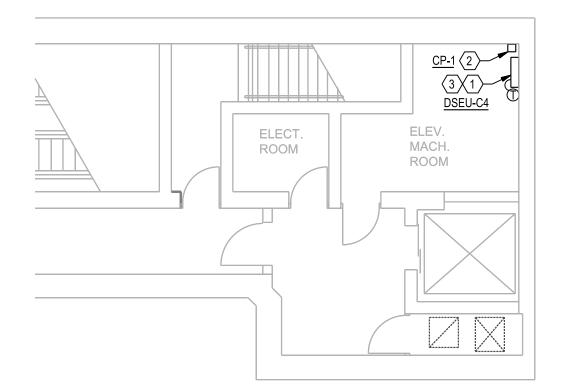
1/8" = 1'-0" SHEET NO: MA4.1.1





SCALE: 1/8" = 1'-0"

(TUNNEL LEVEL)



MECHANICAL FLOOR PLAN (C4)

SCALE: 1/8" = 1'-0" (TUNNEL LEVEL)

GENERAL NOTES

- 1. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗵

- NEW DUCTLESS SPLIT SYSTEM EVAPORATOR.
 PROVIDE THERMOSTAT, REFRIGERANT PIPING, AND
 CONDENSATE PIPING.
- NEW CONDENSATE PUMP. ROUTE CONDENSATE DISCHARGE UP TO FLOOR ABOVE. REFER TO 5/MC4.0.1 FOR CONTINUATION OF PIPING.
- 3. CONTINUE REFRIGERANT PIPING UP TO FLOOR ABOVE. REFER TO 5/MC4.0.1 FOR CONTINUATION OF PIPING.



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MATRIX 3D
44 BROAD STR
ATLANTA, GA 33
PHONE: 404.522
FAX: 404.522.

PEACHTREE STREET, 44 BROAD STREET
TLANTA, GA 30309 ATLANTA, GA 30303
NE: 404.419.9190 PHONE: 404.522.3801
K: 404.946.2017 FAX: 404.522.3823

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PHASE 3 VERTICAL

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

TRANSPORTATION

NO. DATE BY REVISION

CONCOURSE 'B'
APRON LEVEL
MECHANCIAL

NEW FLOOR PLAN

WBS NUMBER:
H.03.90.202

FC NUMBER:
6006007929

CONSULTANT PROJECT NUMBER:
07306.16

REFERENCE NUMBER

APPROVED BY:
J. GILLESPIE

APPROVED BY:
J. GILLESPIE

DEMOLITION /

DATE:

06.11.2014

SCALE:

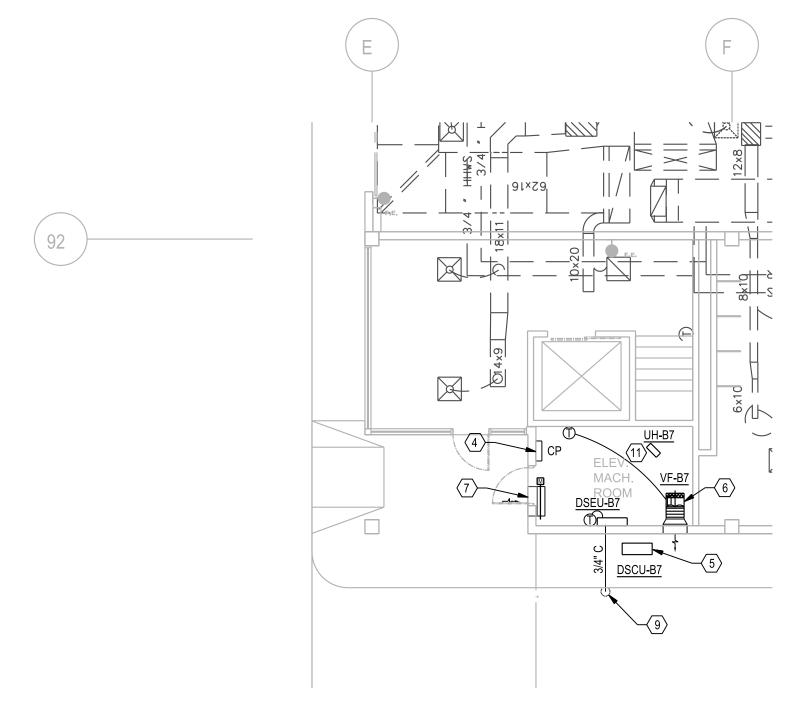
1/8" = 1'
SHEET NO:

SCALE: 1/8" = 1'-0" SHEET NO: MB4.0.1



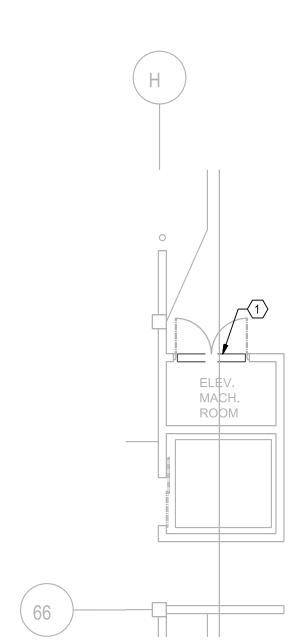
APRON LEVEL



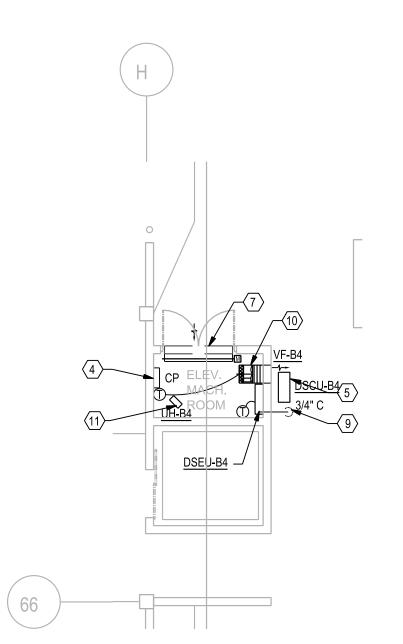




APRON LEVEL



MECHANICAL DEMOLITION PLAN (B4) SCALE: 1/8" = 1'-0" APRON LEVEL



MECHANICAL FLOOR PLAN (B4)

SCALE: 1/8" = 1'-0"

APRON LEVEL

GENERAL NOTES

- . CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗵

- 1. EXISTING LOUVER TO REMAIN.
- 2. DEMOLISH EXISTING EXHAUST FAN. EXTERIOR LOUVER TO REMAIN. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 3. DEMOLISH EXISTING UNIT HEATER. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 4. PROVIDE DDC CONTROL PANEL.
- 5. NEW DUCTLESS SPLIT SYSTEM. PROVIDE AND INSTALL REFRIGERANT PIPING, THERMOSTAT, AND CONDENSATE PIPING.
- 6. NEW VENTILATION FAN. TRANSITION SHEET METAL TO EXISTING LOUVER.
- 7. RETROFIT EXISTING LOUVER WITH NEW MOTOR OPERATED DAMPER AND SHEET METAL COLLAR.
- 8. DEMOLISH EXISTING LINE VOLTAGE THERMOSTAT. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 3/4" CONDENSATE FROM EVAPORATOR UNIT, THROUGH WALL, AND TERMINATE PAST SIDEWALK. PROVIDE TRIP HAZZARD COVER.
- 10. NEW VENTILATION FAN. REFER TO ARCHITECTURAL DRAWINGS FOR NEW LOUVER.
- 11. NEW UNIT HEATER SUSPENDED FROM STRUCTURE. COORDINATE ALL MANUFACTURER SPECIFIED SERVICE AND OPERATIONAL CLEARANCES WITH INSTALLATION



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PHONE: 404.688.2200

FAX: 404.688.2400

PHASE 3 **VERTICAL TRANSPORTATION**

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL **AIRPORT**

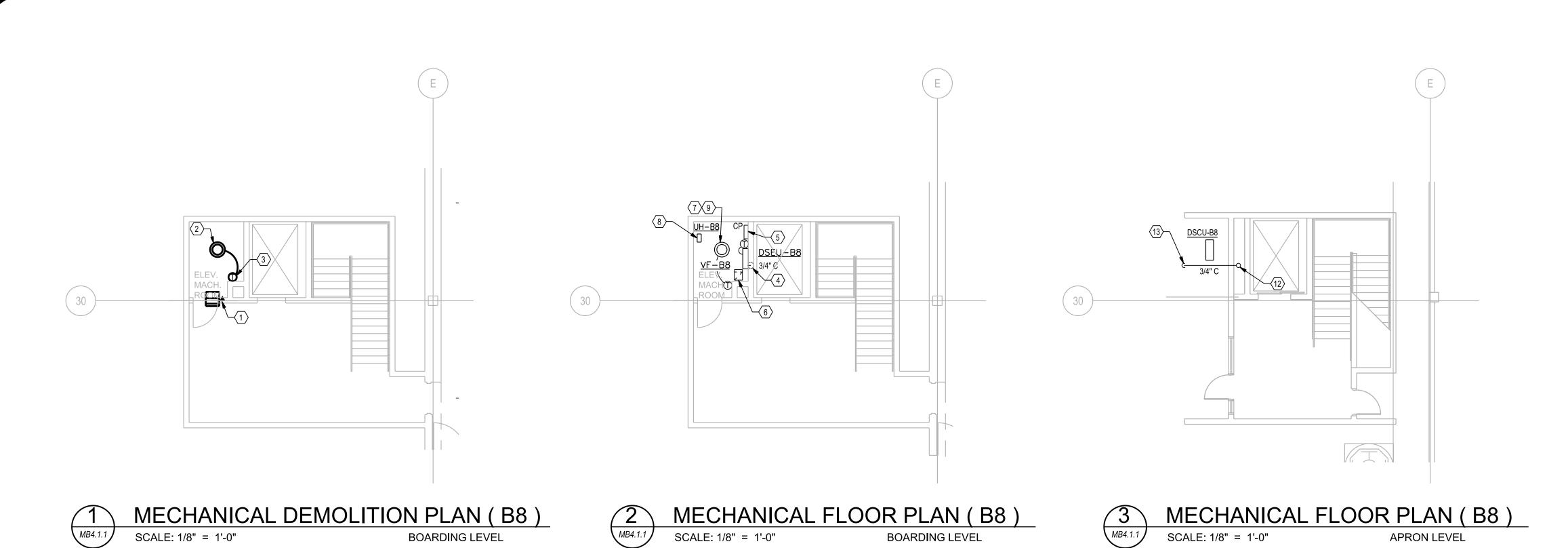
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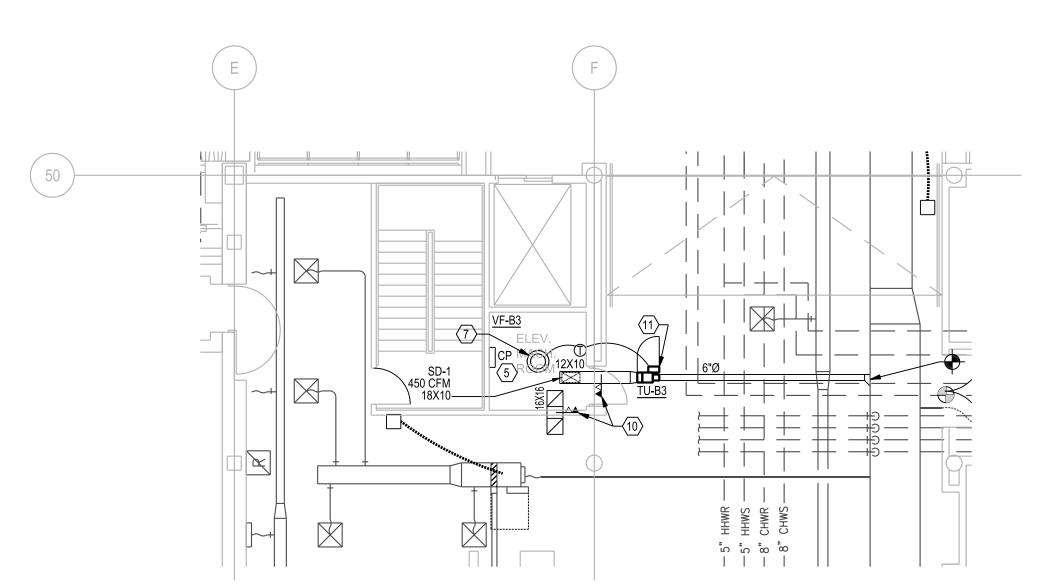
APRON LEVEL MECHANICAL **DEMOLITION /** NEW FLOOR PLAN

WBS NUMBER:	<i>DRAWN BY:</i>
H.03.90.202	J. GILLESPIE
FC NUMBER:	DESIGNED BY:
6006007929	J. GILLESPIE
CONSULTANT PROJECT NUMBER:	CHECKED BY:
07306.16	R. ANWAR
REFERENCE NUMBER ELEVATOR	<i>APPROVED BY:</i> J. GILLESPIE
LLLVATOR	DATE: 06.11.2014
5 4	SCALE: 1/8" = 1'-0"

SHEET NO:

MB4.0.2





MECHANICAL FLOOR PLAN (B3) SCALE: 1/8" = 1'-0" **BOARDING LEVEL**

NOTE: NO MECHANICAL DEMOLITION FOR MACHINE ROOM B3 REQUIRED.



GENERAL NOTES

- CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗵

- . DEMOLISH EXISTING FIRE DAMPER AND TRANSFER AIR DUCT. IN FILL THE OPENING IN WALL TO MAINTAIN THE FIRE RATING.
- 2. DEMOLISH EXISTING VENTILATION FAN IN ROOF. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS. EXISTING ROOF CURB TO REMAIN.
- 3. DEMOLISH EXISTING LINE VOLTAGE THERMOSTAT. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 4. 3/4" CONDENSATE PIPING DOWN IN WALL TO LÉVEL BELOW.
- 5. NEW DDC CONTROL PANEL.
- 6. 12X12 MAKE UP AIR OPENING THROUGH SLAB WITH GRAVITY DAMPER AND LOUVER. PROVIDE 12X12 DUCT EXTENSION AND DISCHARGE HORIZONTALLY.
- 7. NEW VENTILATION FAN. 12"X12" INLET DUCT WITH GRAVITY DAMPER AT TOP OF DUCT.
- 8. NEW UNIT HEATER SUSPENDED BY WALL BRACKET COORDINATE ALL MANUFACTURER SPECIFIED SERVICE AND OPERATIONAL CLEARANCES WITH INSTALLATION.
- 9. TRANSITION FAN INLET TO EXISTING ROOF CURB. 10. NEW FIRE SMOKE DAMPER.

11. NEW SINGLE DUCT TERMINAL UNIT.

12.3/4" CONDENSATE DOWN FROM LEVEL ABOVE.

13.3/4" CONDENSATE DISCHARGE, TERMINATE PAST SIDEWALK, AND PROVIDE TRIP HAZZARD COVER.



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PHONE: 404.688.2200 FAX: 404.688.2400

PHASE 3 **VERTICAL TRANSPORTATION**

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL **AIRPORT**

NO. DATE BY REVISION CONCOURSE 'B'

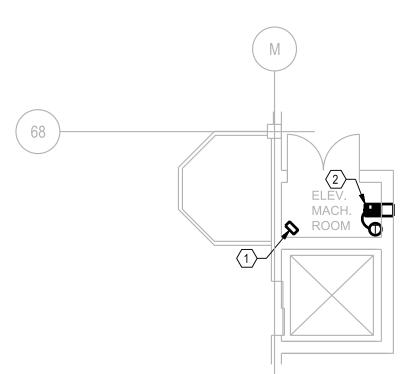
BOARDING LEVEL MECHANICAL DEMOLITION / NEW FLOOR PLAN

WBS NUMBER: H.03.90.202 FC NUMBER:	DRAWN BY: J. GILLESPIE DESIGNED BY:
6006007929	J. GILLESPIE
CONSULTANT PROJECT NUMBER: 07306.16	CHECKED BY: R. ANWAR
REFERENCE NUMBER ELEVATOR	<i>APPROVED BY:</i> J. GILLESPIE
LLLVATOR	DATE: 06.11.2014
B3	SCALE: 1/8" = 1'-0"

SHEET NO:

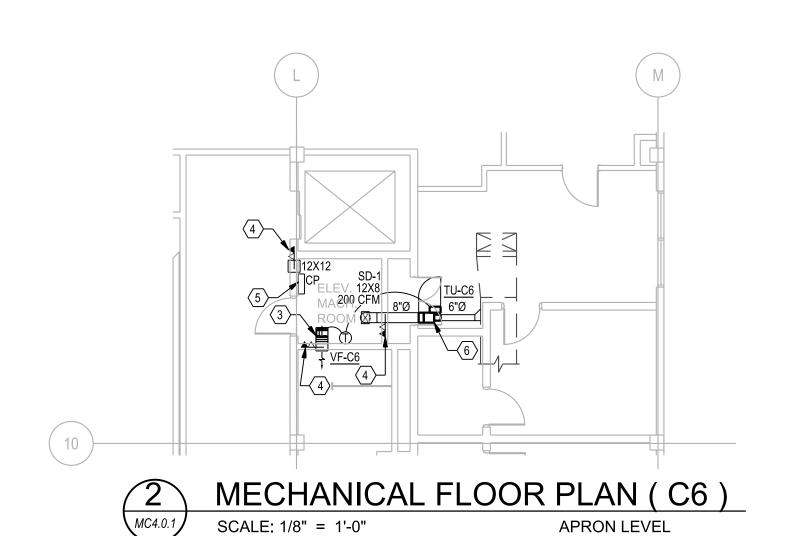
MB4.1.1

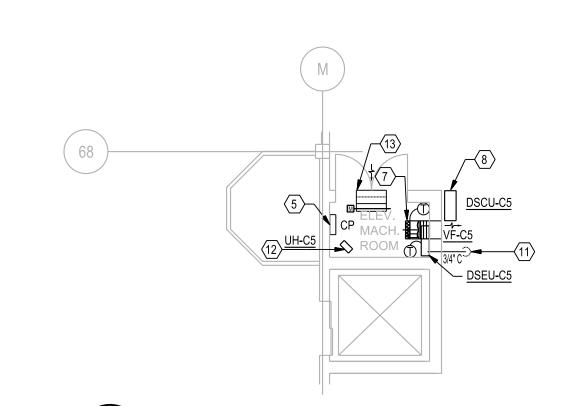
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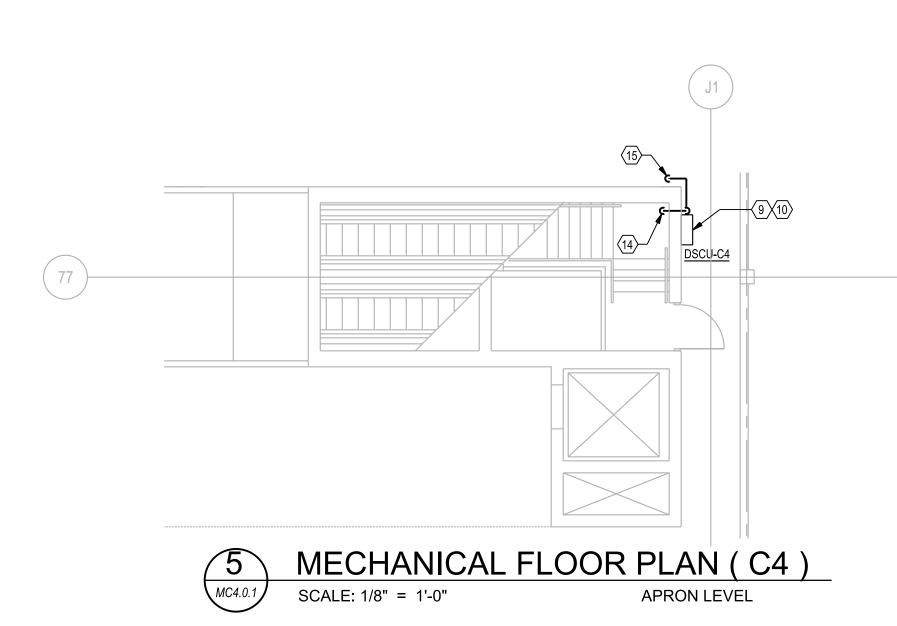
MC4.0.1

MECHANICAL DEMOLITION PLAN (C5)





MECHANICAL FLOOR PLAN (C5) MC4.0.1 SCALE: 1/8" = 1'-0"





GENERAL NOTES

- . CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗴

- DEMOLISH EXISTING UNIT HEATER. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 2. DEMOLISH EXISTING VENTILATION FAN AND LOUVER. COORDINATE DEMOLITION WITH ELECTRICAL
- 3. NEW VENTILATION FAN.
- 4. NEW FIRE SMOKE DAMPER.
- 5. NEW DDC CONTROL PANEL.
- 6. NEW SINGLE DUCT TERMINAL UNIT.
- 7. NEW VENTILATION FAN AND DISCHARGE LOUVER. COORDINATE LOUVER INSTALLATION WITH ARCHITECTURAL DRAWING.
- 8. NEW DUCTLESS SPLIT SYSTEM. PROVIDE REFRIGERANT PIPING, THEMOSTAT, AND CONDENSATE PIPING. ROUTE CONDENSATE PIPING THROUGH EXTERIOR WALL.
- EVAPORATOR UNIT. ALL PIPING SHALL BE ROUTED UNDER THE STAIRS. 10. LOCATION OF CONDENSING UNIT SERVING

NEW DUCT LESS SPLIT SYSTEM CONDENSING UNIT. REFER TO MB4.0.1 FOR LOCATION OF MATCHING

- ELEVATOR ROOM B2 IS MIRROR IMAGE OF
- 11.3/4" CONDENSATE FROM INSIDE UNIT, THROUGH WALL, AND TERMINATE PAST SIDEWALK. PROVIDE TRIP HAZZARD COVER. 12.NEW UNIT HEATER SUSPENDED FROM STRUCTURE. COORDINATE ALL MANUFACTURER SPECIFIED SERVICE AND OPERATIONAL CLEARANCES WITH

INSTALLATION.

- 13. PROVIDE NEW LOUVER, 30X18 NOMINAL SIZE, AND 1.5 SQUARE FEET MINIMUM FREE AREA. COORDINATE INSTALLATION WITH ARCHITECTURAL DRAWINGS. EXTEND DUCTWORK FROM LOUVER AND PROVIDE MOTOR OPERATED DAMPER.
- 14.3/4" CONDENSATE UP FROM BELOW AND THROUGH WALL. REFER TO 2/MB4.0.1 FOR CONTINUATION OF PIPING. ALL PIPING SHALL BE ROUTED UNDER THE STAIRS.
- 15. DISCHARGE CONDENSATE PAST SIDEWALK. PROVIDE TRIP HAZARD GUARD.



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PHASE 3 **VERTICAL TRANSPORTATION**

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL **AIRPORT**

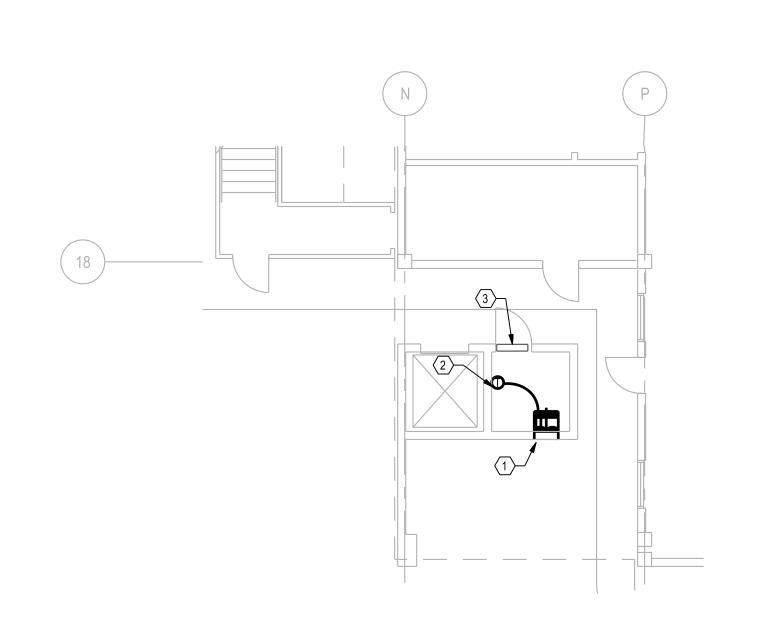
NO. DATE BY REVISION CONCOURSE 'C' APRON LEVEL **MECHANICAL** DEMOLITION /

NEW FLO	OR PLAN
WBS NUMBER: H.03.90.202	<i>DRAWN BY:</i> J. GILLESPIE
FC NUMBER: 6006007929	DESIGNED BY: J. GILLESPIE
CONSULTANT PROJECT NUMBER: 07306.16	CHECKED BY: R. ANWAR
REFERENCE NUMBER ELEVATOR	APPROVED BY: J. GILLESPIE
LLLVATOR	DATE: 06.11.2014
C4	SCALE: 1/8" = 1'-0"

SHEET NO:

MC4.0.1

K:\07306.16 Vertical Transportation Phase 3_CADD\MC4.0.1 APRON LEVEL ENLARGE ELEVATOR MECH PLANS C4 C5 C6.dwg

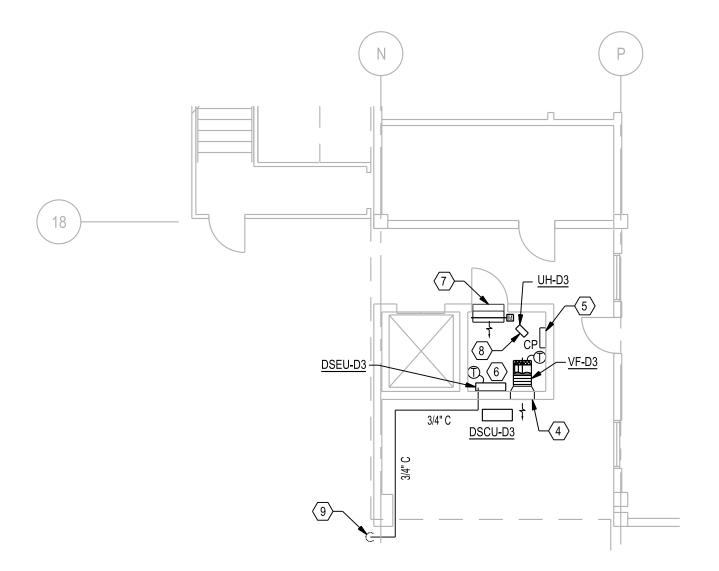


MD4.0.1

SCALE: 1/8" = 1'-0"

MECHANICAL DEMOLITION PLAN (D3)

APRON LEVEL





GENERAL NOTES

- 1. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗵

- 1. DEMOLISH EXISTING VENTILATION FAN. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS. EXISTING LOUVER TO REMAIN.
- DEMOLISH EXISTING LINE VOLTAGE THERMOSTAT. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 3. EXISTING LOUVER TO REMAIN.
- NEW VENTILATION FAN. TRANSITION SHEET METAL COLLAR FROM FAN TO EXISTING LOUVER.
- 5. NEW DDC CONTROL PANEL.
- 6. NEW DUCTLESS SPLIT SYSTEM. PROVIDE REFRIGERANT PIPING, THERMOSTAT, AND CONDENSATE PIPING. ROUTE CONDENSATE PIPING THROUGH EXTERIOR WALL.
- 7. NEW MOTOR OPERATED DAMPER RETROFITTED TO EXISTING LOUVER. EXTEND SHEET METAL SLEEVE FROM EXISTING LOUVER.
- 8. NEW UNIT HEATER SUSPENED FROM STRUCTURE. COORDINATE ALL MANUFACTURER SPECIFIED SERVICE AND OPERATIONAL CLEARANCES WITH INSTALLATION.
- 3/4" CONDENSATE FROM INSIDE UNIT, THROUGH WALL, AND TERMINATE PAST SIDEWALK. PROVIDE TRIP HAZZARD COVER.



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Atlanta International Airport



HEERY INTERNATIONAL, INC.

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PHASE 3
VERTICAL
TRANSPORTATION

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

NO. DATE BY REVISION

CONCOURSE 'D'

APRON LEVEL

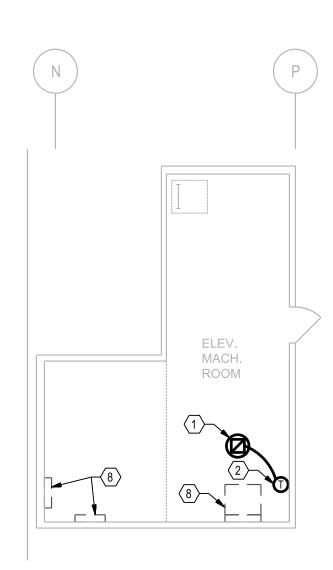
MECHANICAL

DEMOLITION /

NEW FLOOR PLAN		
WBS NUMBER: H.03.90.202	<i>DRAWN BY:</i> J. GILLESPIE	
FC NUMBER: 6006007929	DESIGNED BY: J. GILLESPIE	
CONSULTANT PROJECT NUMBER: 07306.16	CHECKED BY: R. ANWAR	
REFERENCE NUMBER ELEVATOR	APPROVED BY: J. GILLESPIE	
LLLVATOR	DATE: 06.11.2014	
D3	SCALE: 1/8" = 1'-0"	

MD4.0.1



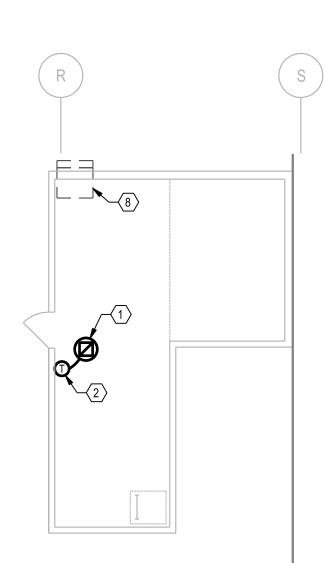




MECHANICAL DEMOLITION PLAN (D2)

SCALE: 1/8" = 1'-0"

ROOF LEVEL

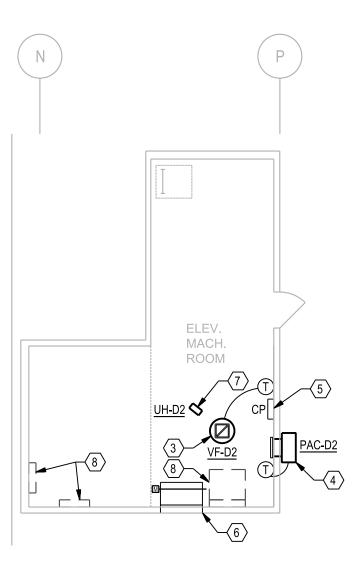




MECHANICAL DEMOLITION PLAN (D1)

SCALE: 1/8" = 1'-0"

ROOF LEVEL

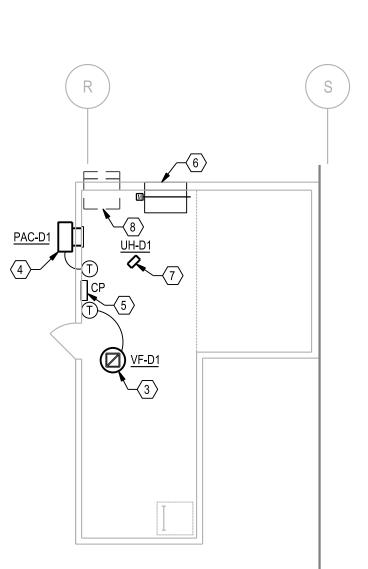




MECHANICAL FLOOR PLAN (D2)

SCALE: 1/8" = 1'-0"

ROOF LEVEL





MECHANICAL FLOOR PLAN (D1)

SCALE: 1/8" = 1'-0"

ROOF LEVEL



GENERAL NOTES

- 1. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗵

- . DEMOLISH EXISTING EXHAUST FAN. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS. EXISTING ROOF CURB TO REMAIN.
- 2. DEMOLISH EXISTING LINE VOLTAGE THERMOSTAT. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 3. NEW ROOF MOUNTED EXHAUST FAN. TRANSITION FROM FAN INLET TO EXISTING ROOF CURB AS REQUIRED. 16"X16" INLET DUCT WITH GRAVITY DAMPER AT BOTTOM OF DUCT.
- 4. NEW WALL MOUNTED UNITARY PACKAGED AIR CONDITINING UNIT. PROVIDE THERMOSTAT AND ROUTE CONDENSATE TO SPLASH BLOCK BELOW UNIT.
- 5. DDC NEW CONTROL PANEL.
- 6. PROVIDE NEW LOUVER, 42X36 NOMINAL SIZE, AND 5.6 SQUARE FEET MINIMUM FREE AREA. COORDINATE INSTALLATION WITH ARCHITECTURAL DRAWINGS. EXTEND DUCTWORK FROM LOUVER AND PROVIDE LOW VOLTAGE MOTOR OPERATED DAMPER.
- NEW UNIT HEATER SUSPENDED FROM STRUCTURE. COORDINATE ALL MANUFACTURER SPECIFIED SERVICE AND OPERATIONAL CLEARANCES WITH INSTALLATION.
- 8. EXISTING DUCTWORK TO REMAIN.



CITY OF ATLANTA, GEORGIA

Hartsfield-Jackson Atlanta International Airport

HSST MATRIX 2D

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RICHARD WITTSCHIEBE HAND ARCHITECTS

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PHASE 3
VERTICAL
TRANSPORTATION

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

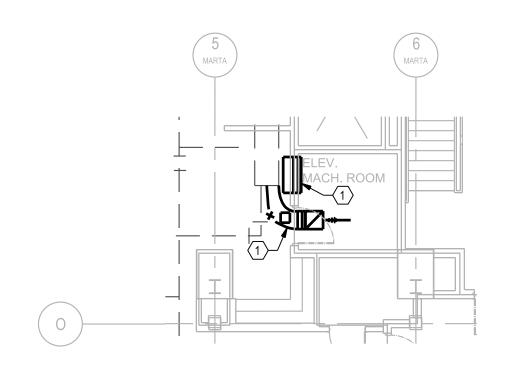
DATE	BY	REVISION				
CONCOURSE 'D'						

CONCOURSE 'D'
ROOF LEVEL
MECHANICAL
DEMOLITION /
NEW FLOOR PLAN

11211120	
WBS NUMBER: H.03.90.202	<i>DRAWN BY:</i> J. GILLESPIE
FC NUMBER: 6006007929	DESIGNED BY: J. GILLESPIE
CONSULTANT PROJECT NUMBER: 07306.16	CHECKED BY: R. ANWAR
REFERENCE NUMBER ELEVATOR	APPROVED BY: J. GILLESPIE
ELEVATOR	DATE: 06.11.2014
D1	SCALE: 1/8" = 1'-0"

MD4.2.1

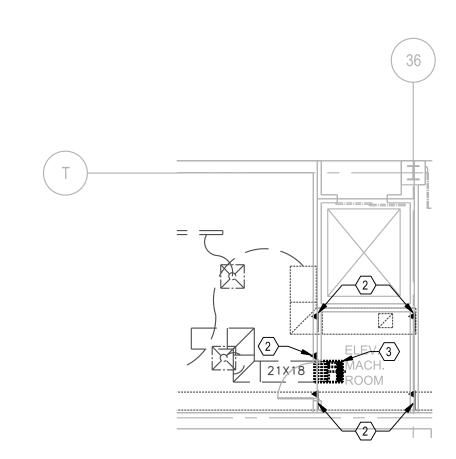
LEASED FOR CONSTRUCTION



MECHANICAL DEMOLITION PLAN (T14)

SCALE: 1/8" = 1'-0"

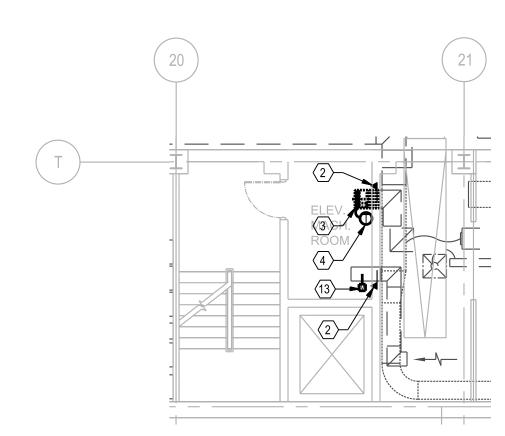
APRON LEVEL



MECHANICAL DEMOLITION PLAN (T13)

SCALE: 1/8" = 1'-0"

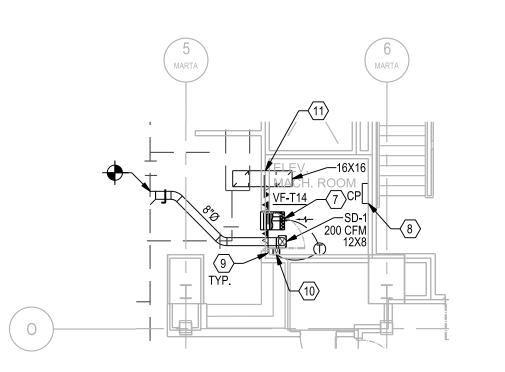
APRON LEVEL



MECHANICAL DEMOLITION PLAN (T11)

SCALE: 1/8" = 1'-0"

APRON LEVEL

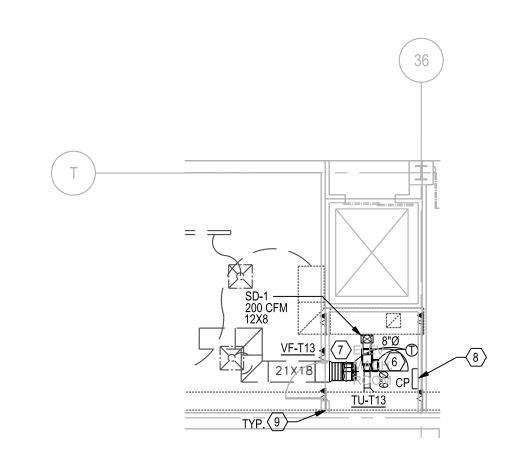


2 N MT4.0.1 S

MECHANICAL FLOOR PLAN (T14)

SCALE: 1/8" = 1'-0"

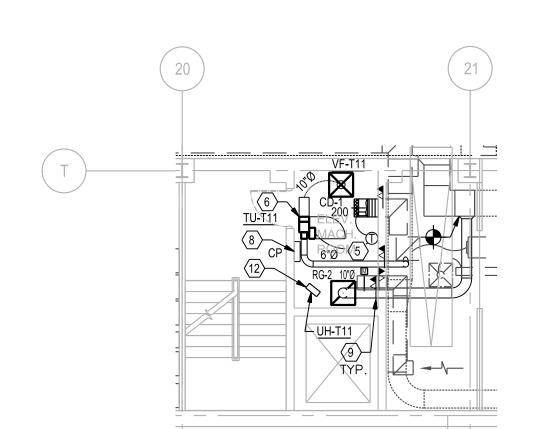
RON LEVEL



MECHANICAL FLOOR PLAN (T13)

SCALE: 1/8" = 1'-0"

APRON LEVEL



6 MECHANICAL FLOOR PLAN (T11)

SCALE: 1/8" = 1'-0" APRON LEVEL



GENERAL NOTES

- . CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗴

- DEMOLISH DUCTWORK AND CAP AND SEAL REMAINING DUCTWORK.
- 2. DEMOLISH FIRE DAMPERS.
- 3. DEMOLISH EXISTING EXHAUST FAN. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- DEMOLISH EXISTING LINE VOLTAGE THERMOSTAT. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 5. NEW ACTUATOR FOR EXISTING DAMPER. REFURBISH DAMPER AS NECESSARY TO OPERATE.
- 6. NEW SINGLE DUCT TERMINAL UNIT.
- 7. NEW VENTILATION FAN. TRANSITION DUCTWORK FROM DISCHARGE AS REQUIRED TO EXISTING DUCTWORK.
- 8. NEW DDC CONTROL PANEL.
- 9. NEW FIRE SMOKE DAMPER.
- 10.NEW LOW VOLTAGE, TWO-POSITION MOTOR OPERATED DAMPER.
- 11. NEW TRANSFER AIR DUCT, SIZE AS NOTED.
- 12. NEW UNIT HEATER SUSPENDED BY WALL BRACKET. COORDINATE ALL MANUFACTURER SPECIFIED SERVICE AND OPERATIONAL CLEARANCES WITH INSTALLATION.
- 13. DEMOLISH EXISTING ELECTRIC ACTUATOR. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.



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Atlanta International Airport

HSST MATRIX 3D

999 PEACHTREE STREET, 44 BROAD STREET
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PHONE: 404.419.9190 PHONE: 404.522.3801
FAX: 404.946.2017 FAX: 404.522.3823

RICHARD WITTSCHIEBE HAND ARCHITECTS
15 SIMPSON STREET
ATLANTA, GA 30308

PHONE: 404.688.2200 FAX: 404.688.2400

PHASE 3
VERTICAL
TRANSPORTATION

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

NO. DATE BY REVISION

MAIN TERMINAL

APRON LEVEL

MECHANCIAL
DEMOLITION /
NEW FLOOR PLAN

WBS NUMBER: DRAWN BY:

WBS NUMBER:
H.03.90.202

FC NUMBER:
6006007929

CONSULTANT PROJECT NUMBER:
07306.16

REFERENCE NUMBER

APPROVED BY:
J. GILLESPIE

APPROVED BY:
J. GILLESPIE

DATE:
06.11.2014

T11

SCALE:

1/8" = 1'-0"

T14

MT4.0.1

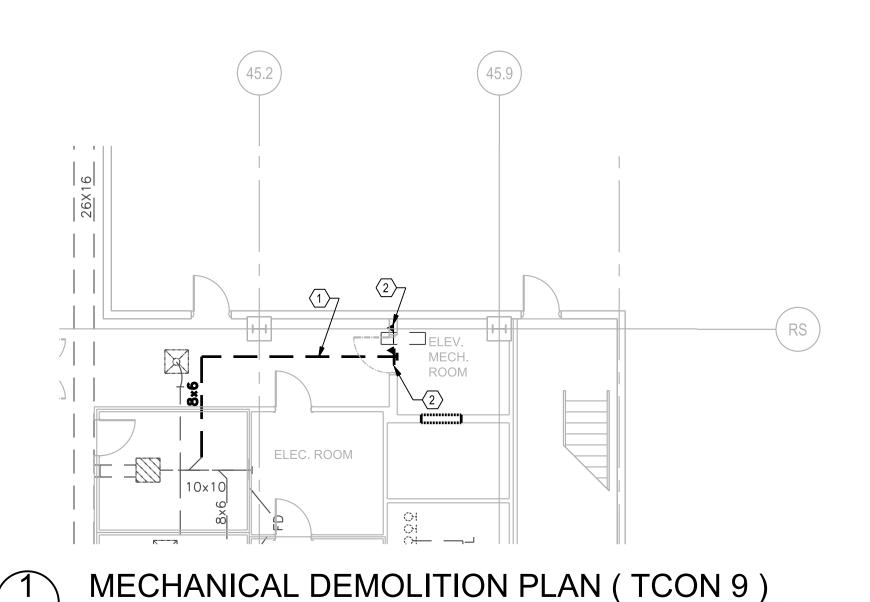
K:\07306.16 Vertical Transportation Phase 3_CADD\MT4.0.1 APRON LEVEL ENLARGE ELEVATOR MECH PLANS T11 T13 T14.dwg

MT4.0.2

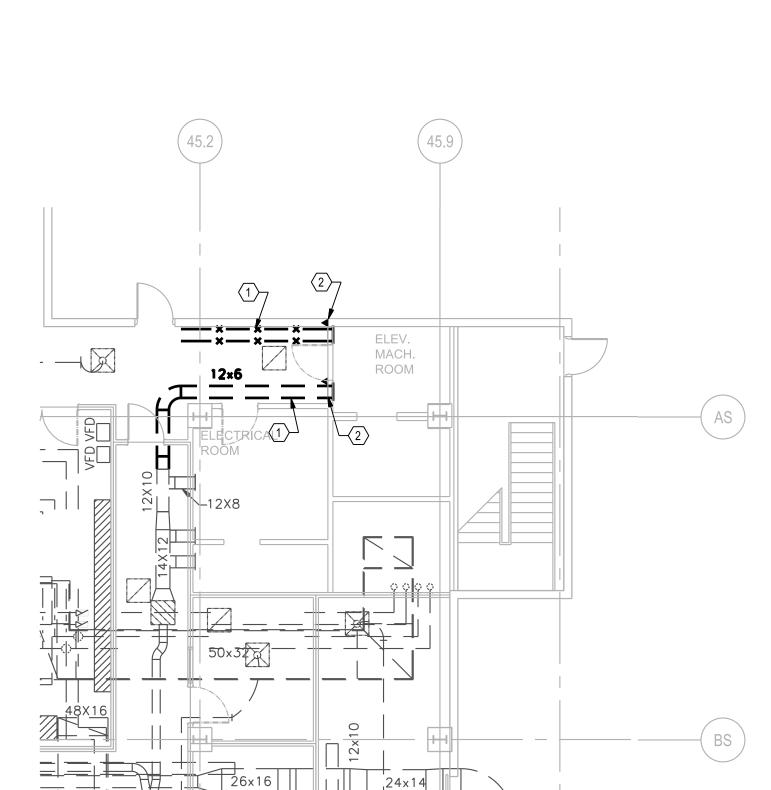
MT4.0.2

SCALE: 1/8" = 1'-0"

SCALE: 1/8" = 1'-0"

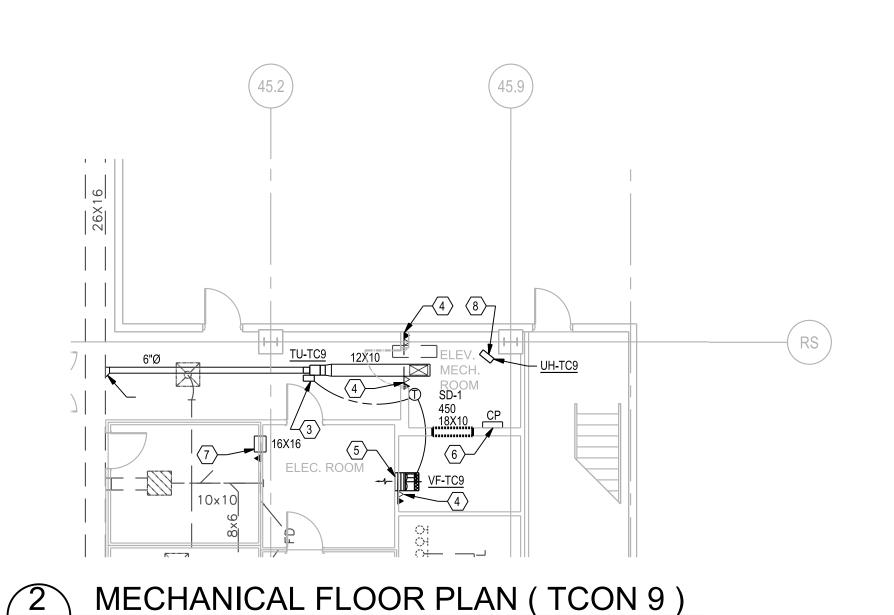


APRON LEVEL

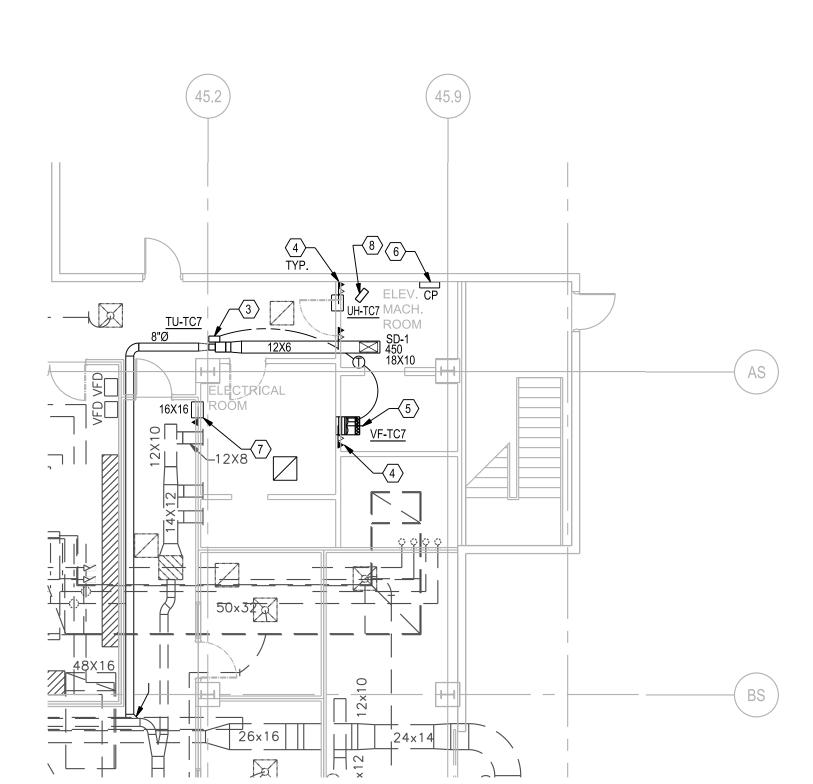


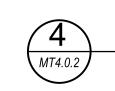
MECHANICAL DEMOLITION PLAN (TCON 7)

APRON LEVEL



APRON LEVEL





MT4.0.2

SCALE: 1/8" = 1'-0"

MECHANICAL FLOOR PLAN (TCON 7) SCALE: 1/8" = 1'-0"

APRON LEVEL



GENERAL NOTES

- . CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗵

- . DEMOLISH INIDICATED DUCTWORK; CAP AND SEAL REMAINING DUCTWORK.
- 2. DEMOLISH FIRE DAMPER.
- 3. NEW SINGLE DUCT TERMINAL UNIT.
- 4. NEW FIRE-SMOKE DAMPER.
- 5. NEW VENTILATION FAN.
- 6. NEW DDC CONTROL PANEL.
- 7. NEW TRANSFER AIR DUCT, SIZE AS NOTED, WITH NEW FIRE DAMPER.
- 8. NEW UNIT HEATER SUSPENDED FROM WALL BRACKET. COORDINATE ALL REQUIRED SERVICE AND OPERATION CLEARANCE FOR UNIT.



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RICHARD WITTSCHIEBE HAND ARCHITECTS

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PHASE 3 **VERTICAL TRANSPORTATION**

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL **AIRPORT**

NO. DATE BY REVISION CONCOURSE T APRON LEVEL **MECHANICAL** DEMOLITION /

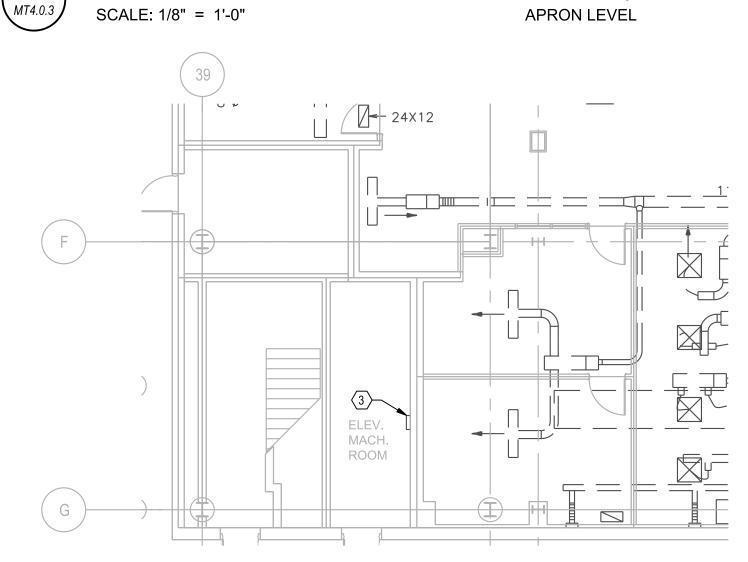
NEW FLOOR PLAN WBS NUMBER: H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: J. GILLESPIE ONSULTANT PROJECT NUMBER CHECKED BY: 07306.16 REFERENCE NUMBER APPROVED BY: J. GILLESPIE **ELEVATOR** 06.11.2014

TCON 7 TCON 9

SHEET NO: MT4.0.2

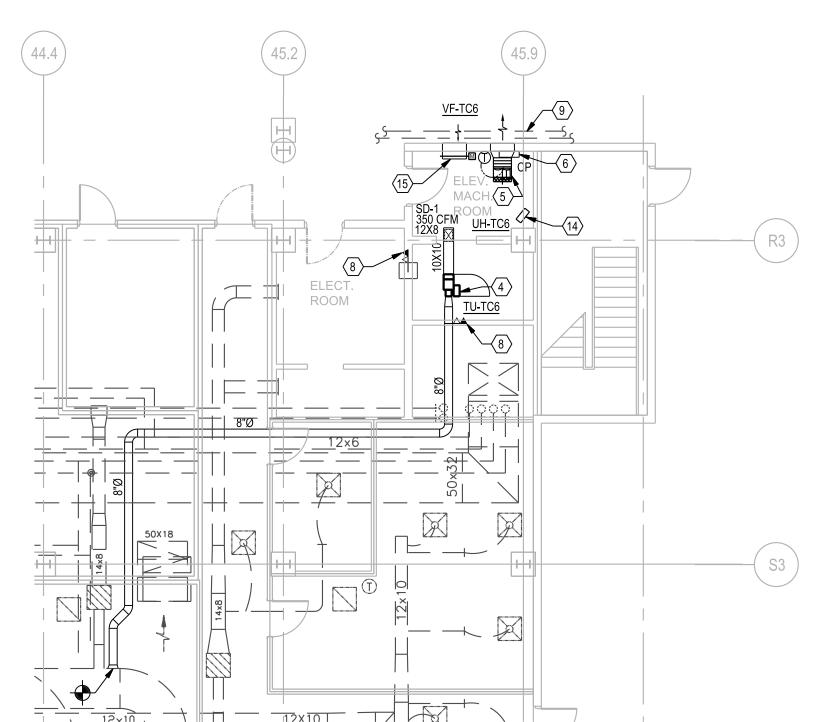
1/8" = 1'-0"

MECHANICAL DEMOLITION PLAN (TCON 6)



MECHANICAL DEMOLITION PLAN (TCON 1) MT4.0.3 SCALE: 1/8" = 1'-0"

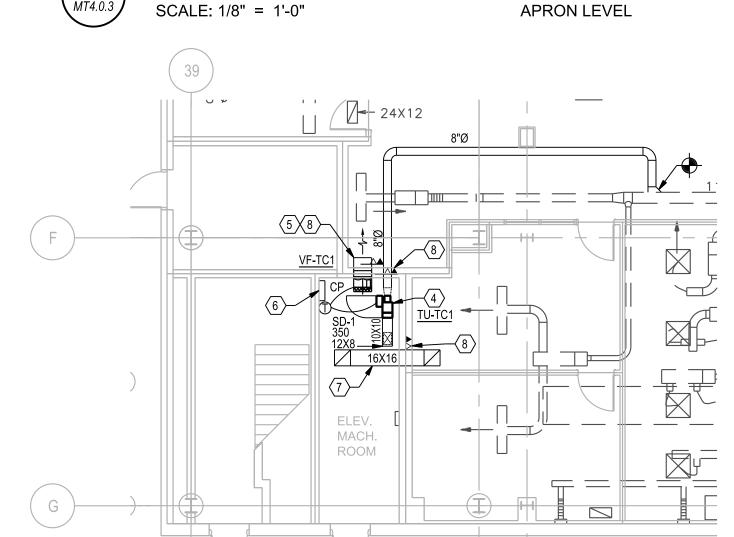
APRON LEVEL



MT4.0.3

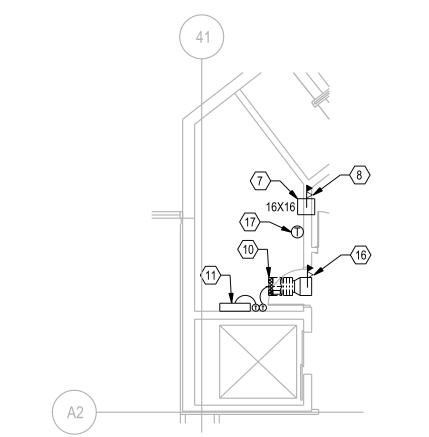
MECHANICAL FLOOR PLAN (TCON 6)

SCALE: 1/8" = 1'-0"



MECHANICAL FLOOR PLAN (TCON 1)

SCALE: 1/8" = 1'-0" **APRON LEVEL**



MECHANICAL FLOOR PLAN (TCON 5)

NOTE: TCON 5 IS LOCATED ON BOARDING LEVEL. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION.

GENERAL NOTES

- . CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗴

- 1. DEMOLISH FIRE DAMPER.
- 2. DEMOLISH EXHAUST FAN. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS
- 3. EXISTING UNIT HEATER TO REMAIN. CONTRACTOR TO VERIFY FUNCTIONALITY AND RESTORE AS REQUIRED.
- 4. NEW SINGLE DUCT TERMINAL UNIT.
- 5. NEW VENTILATION FAN.
- 6. NEW DDC CONTROL PANEL.
- 7. NEW TRANSFER AIR DUCT.
- 8. NEW FIRE SMOKE DAMPER.
- 9. FAN AND MAKEUP AIR LOUVER TO BE MOUNTED HIGH IN WALL OVER EXISTING CHILLED WATER
- 10. EXISTING VENTILATION FAN TO REMAIN. CONTRACTOR TO VERIFY FUNCTIONALITY AND RESTORE AS REQUIRED.
- 11.EXISTING DUCTLESS SPLIT SYSTEM EVAPORATOR CONTRACTOR TO VERIFY FUNCTIONALITY AND RESTORE AS REQUIRED, INCLUDING THE ASSOCIATED CONDENSING UNIT. CONTRACTOR TO FIELD VERIFY LOCATION OF CONDENSING UNIT.
- 12. EXISTING CHILLED WATER PIPING ROUTED ALONG BUILDING EXTERIOR.
- 13. DEMOLISH EXISTING UNIT HEATER. COORDINATE WITH ELECTRICAL DRAWINGS.
- 14. NEW UNIT HEATER SUSPENED FROM STRUCTURE. COORDINATE ALL MANUFACTURER SPECIFIED SERVICE AND OPERATIONAL CLEARANCES WITH INSTALLATION.
- 15. PROVIDE NEW LOUVER, 30X18 NOMINAL SIZE, AND 1.5 SQUARE FEET MINIMUM FREE AREA. COORDINATE INSTALLATION WITH ARCHITECTURAL DRAWINGS. EXTEND DUCTWORK FROM LOUVER AND PROVIDE LOW VOLTAGE MOTOR OPERATED
- 16. REPLACE EXISTING FIRE DAMPER WITH NEW FIRE SMOKE DAMPER.
- 17. EXTEND DDC NETWORK FROM NEARBY CONTROLLERS AND CONNECT NEW TEMPERATURE SENSOR FOR ROOM MONITORING AND ALARM PURPOSES.



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PHASE 3 **VERTICAL TRANSPORTATION**

HARTSFIELD-JACKSON **ATLANTA** INTERNATIONAL **AIRPORT**

NO. DATE BY REVISION

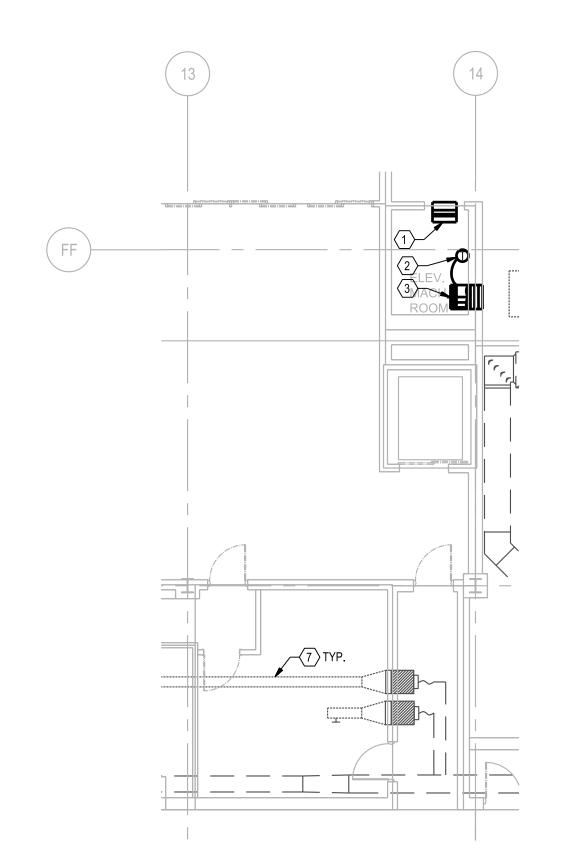
CONCOURSE T APRON LEVEL **MECHANICAL** DEMOLITION /

NEW FLOOR PLAN H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: J. GILLESPIE ONSULTANT PROJECT NUMBEI CHECKED BY: 07306.16 REFERENCE NUMBER APPROVED BY: J. GILLESPIE ELEVATOR DATE: 06.11.2014

TCON 1 TCON 6 TCON 5

SCALE: 1/8" = 1'-0" SHEET NO: MT4.0.3

K:\07306.16 Vertical Transportation Phase 3_CADD\MT4.0.3 APRON LEVEL ENLARGE ELEVATOR MECH PLANS TCON1 TCON6 TCON5.dwg

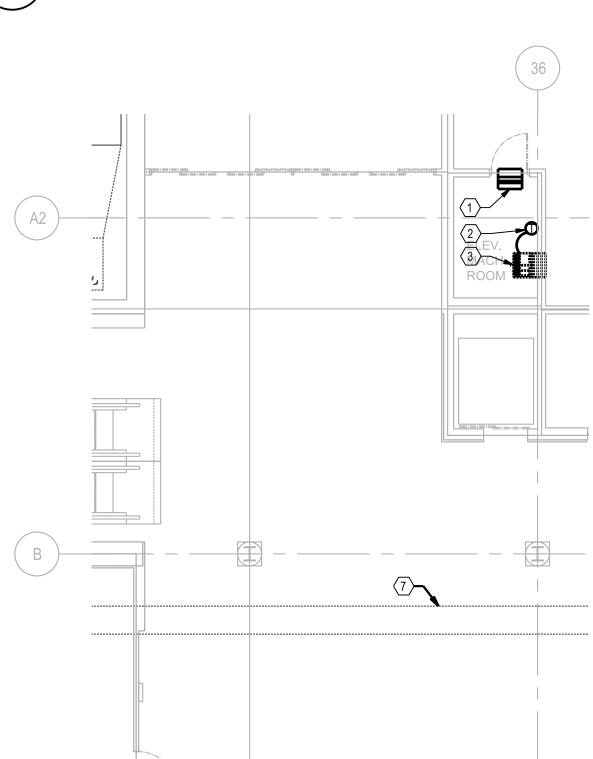


MECHANICAL DEMOLITION PLAN APRON LEVEL (T1)

SCALE: 1/8" = 1'-0"

APRON LEVEL

APRON LEVEL

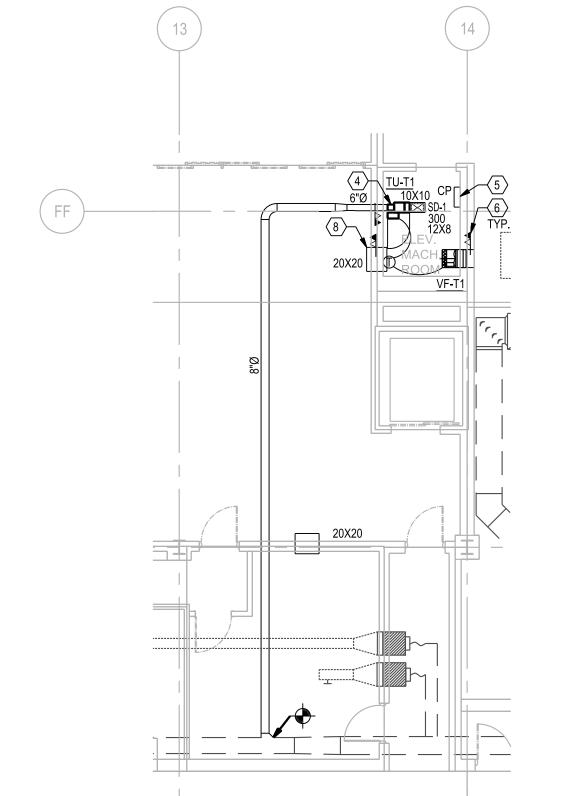


MECHANICAL DEMOLITION PLAN APRON LEVEL (T4)

SCALE: 1/8" = 1'-0"

MT4.0.4

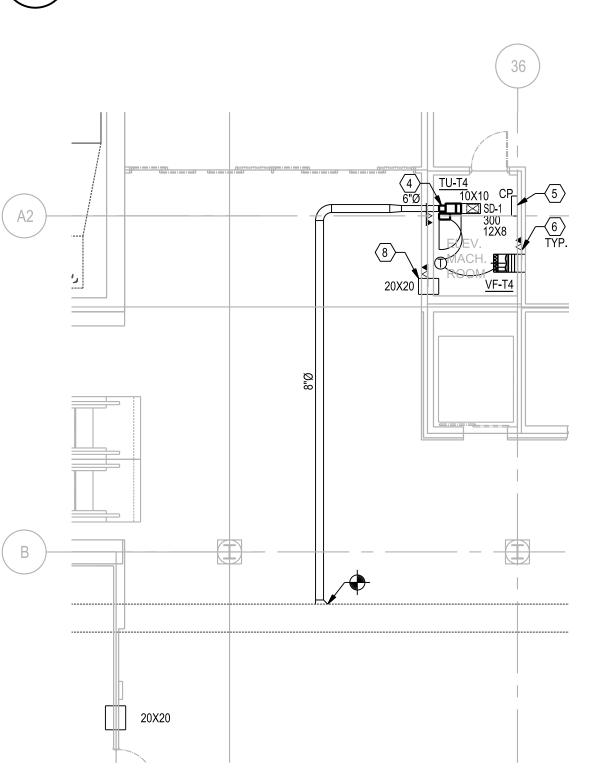
MECHANICAL FLOOR PLAN APRON LEVEL (T4) SCALE: 1/8" = 1'-0" APRON LEVEL



MECHANICAL FLOOR PLAN APRON LEVEL (T1)

SCALE: 1/8" = 1'-0"

APRON LEVEL



GENERAL NOTES

- . CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗴

- . DEMOLISH DAMPER, ACTUATOR, AND CONNECTED ELECTRICAL WIRING. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS. INFILL WALL SUCH THAT RATING REMAINS.
- 2. DEMOLISH EXISTING LINE VOLTAGE THERMOSTAT. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 3. DEMOLISH EXISTING EXHAUST FAN. COORDINATE
- DEMOLITION WITH ELECTRICAL DRAWINGS. 4. NEW SINGLE DUCT TERMINAL UNIT.
- 5. NEW DDC CONTROL PANEL.
- 6. NEW FIRE SMOKE DAMPER.
- 7. EXISTING DUCTWORK TO REMAIN.
- 8. RETURN AIR OPENING ABOVE CEILING.



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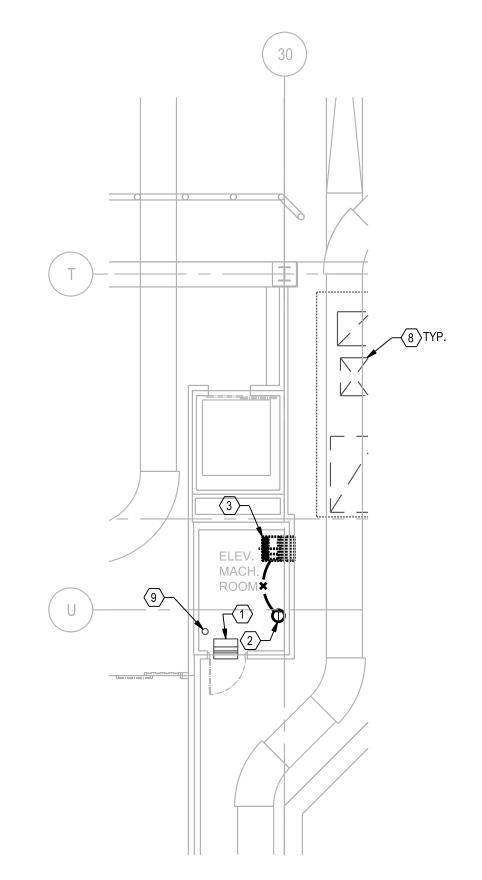
PHASE 3 **VERTICAL** TRANSPORTATION

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL **AIRPORT**

NO. DATE BY REVISION MAIN TERMINAL APRON LEVEL MECHANCIAL DEMOLITION /

NEW FLOOR PLAN H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: J. GILLESPIE ONSULTANT PROJECT NUMBER CHECKED BY: REFERENCE NUMBER APPROVED BY: **ELEVATOR** 06.11.2014

1/8" = 1'-0" SHEET NO: MT4.0.4

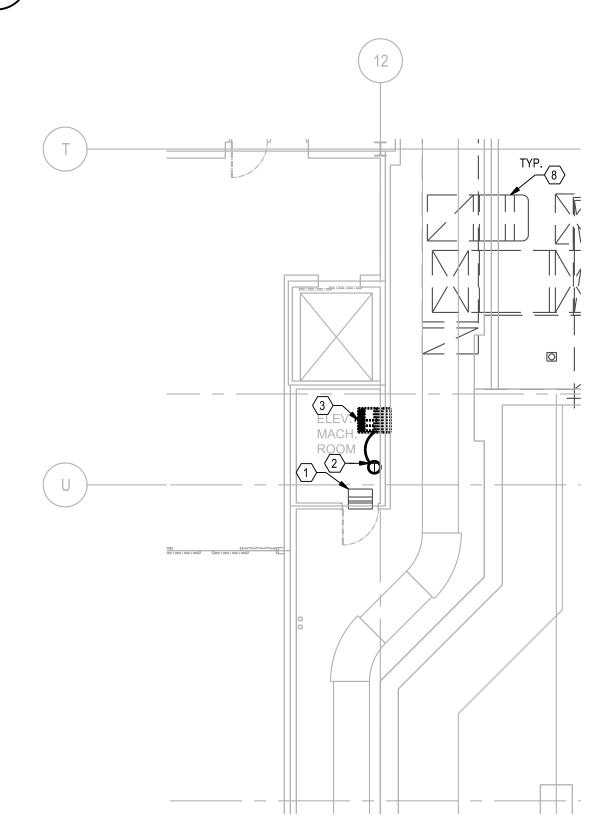


MECHANICAL DEMOLITION PLAN APRON LEVEL (T12)

MT4.0.5

SCALE: 1/8" = 1'-0"

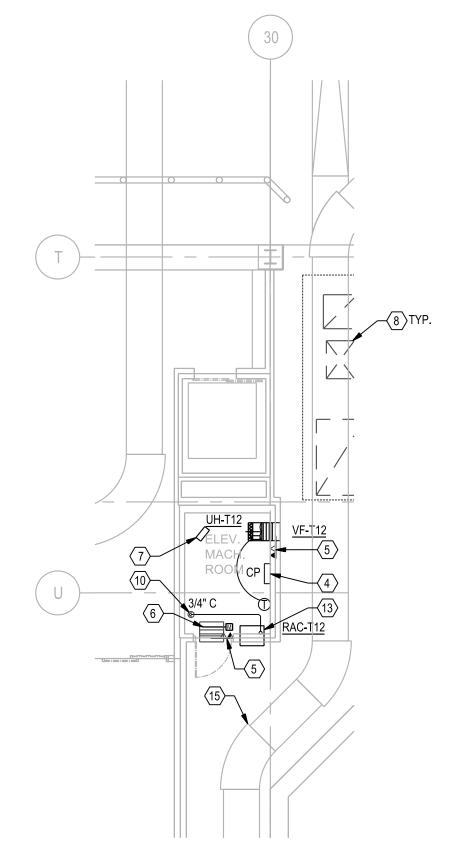
APRON LEVEL



MECHANICAL DEMOLITION PLAN APRON LEVEL (T10)

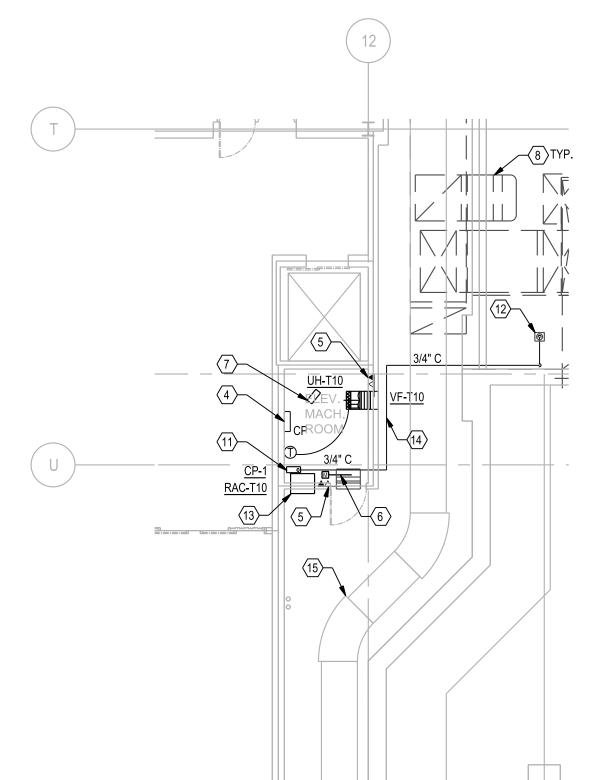
SCALE: 1/8" = 1'-0"

APRON LEVEL



MECHANICAL FLOOR PLAN

MT4.0.5



MECHANICAL FLOOR PLAN APRON LEVEL (T10)

SCALE: 1/8" = 1'-0"

APRON LEVEL



GENERAL NOTES

- . CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗴

- . DEMOLISH EXISTING ACTUATOR FOR DAMPER. COORDINATE DEMOLITION WITH ELECTRICAL
- 2. DEMOLISH EXISTING LINE VOLTAGE THERMOSTAT. COORDINATE DEMOLITION WITH ELECTRICAL
- 3. DEMOLISH EXISTING EXHAUST FAN. COORDINATE DEMOLITION WITH ELECTRICAL DRAWINGS.
- 4. NEW DDC CONTROL PANEL.
- 5. NEW FIRE SMOKE DAMPER.
- 6. NEW LOW VOLTAGE, TWO-POSITION MOTOR OPERATED DAMPER WITH END SWITCH.
- 7. NEW UNIT HEATER SUSPENDED FROM STRUCTURE COORDINATE ALL MANUFACTURER SPECIFIED SERVICE AND OPERATIONAL CLEARANCES WITH INSTALLATION.
- 8. EXISTING DUCTWORK TO REMAIN.
- 9. EXISTING HUB DRAIN IN FLOOR SLAB TO REMAIN.
- 10. ROUTE CONDENSATE PIPING ALONG FLOOR AND TURN INTO HUB DRAIN. PROVIDE TRIP HAZZARD
- 11. PROVIDE CONDENSATE PUMP.
- 12. ROUTE CONDENSATE PIPING FROM CONDENSATE PUMP TO DRAIN. PROVIDE CLEANOUTS AT EVERY 45° WYE FITTING.
- 13. NEW ROOM AIR CONDITIONING UNIT.
- 14. COORDINATE CONDENSATE PIPE ROUTING ABOVE EXISTING CONVEYOR EQUIPMENT.
- 15. EXISTING CONVEYOR EQUIPMENT.



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PHASE 3 **VERTICAL TRANSPORTATION**

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL **AIRPORT**

NO. DATE BY REVISION MAIN TERMINAL APRON LEVEL MECHANCIAL

DEMOLITION /

NEW FLOOR PLAN H.03.90.202 J. GILLESPIE DESIGNED BY: J. GILLESPIE ONSULTANT PROJECT NUMBEI CHECKED BY: REFERENCE NUMBER **ELEVATOR** 06.11.2014

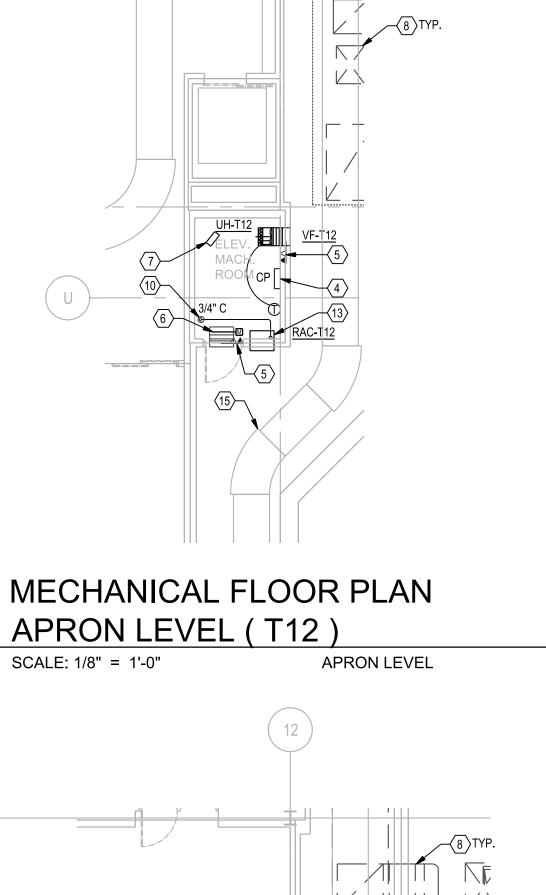
T12

K:\07306.16 Vertical Transportation Phase 3_CADD\MT4.0.5 APRON LEVEL ENLARGE ELEVATOR MECH PLANS T10 T12.dwg

1/8" = 1'-0"

SHEET NO:

MT4.0.5



GENERAL NOTES

- 1. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND NOTE THE EXISTING CONDITIONS.
- 2. NO MATERIAL IN RETURN AIR PLENUMS SHALL EXCEED A FLAME SPREAD INDEX GREATER THAN 25, NOR A SMOKE DEVELOPED INDEX OF 50 PER ASTM STANDARD E84.

KEY NOTES 🗵

- . DEMOLISH EXISTING PACKAGED AIR CONDITIONING UNIT. REPAIR WALL AS REQUIRED BY ARCHITECTURAL DRAWINGS.
- 2. DEMOLISH EXISTING FAN COIL, AND CONTROLS. COORDINATE WITH ELECTRICAL DEMOLITION DRAWINGS.
- 3. DEMOLISH BRANCH CHILLED WATER AND HOT WATER PIPING. COORDINATE WITH ASSOCIATED MECHANICAL PART PLAN. 16"X16" INLET DUCT WITH GRAVITY DAMPER ON BOTTOM OF DUCT.
- DEMOLISH DUCTWORK AND ACCESSORIES. RESTORE WALL TO MAINTAIN FIRE RATING. REFER TO ARCHITECTURAL DRAWINGS.
- 5. NEW ROOF MOUNTED EXHAUST FAN.
- 6. NEW WALL MOUNTED UNITARY PACKAGED AIR CONDITINING UNIT. PROVIDE THERMOSTAT AND ROUTE CONDENSATE TO SPLASH BLOCK.
- 7. DDC NEW CONTROL PANEL. REFER TO CONTROL DIAGRAM.
- 8. NEW EXTERIOR LOUVER WITH MOTOR OPERATED DAMPER. LOUVER SHALL HAVE A MINIMUM FREE AREA OF 7.0 SQUARE FEET AND A PRESSURE DROP OF 0.08 AT 3500 CFM. COORDINATE INSTALLATION OF LOUVER WITH ARCHITECT'S DRAWINGS.
- NEW UNIT HEATER SUSPENDED FROM STRUCTURE. COORDINATE ALL MANUFACTURER SPECIFIED SERVICE AND OPERATIONAL CLEARANCES WITH INSTALLATION.
- 10. VALVE AND CAP CHILLED WATER AND HOT WATER PIPING. ALL PIPING AND ACCESSORIES SHALL BE INSULATED. ADD LABELS TO EACH PIPE.



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ATLANTA, GA 30308

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PHASE 3 VERTICAL

TRANSPORTATION

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

NO. DATE BY REVISION

CONCOURSE T

ROOF LEVEL

MECHANICAL

DEMOLITION
NEW FLOOR PLAN

WBS NUMBER:
H.03.90.202
DRAWN BY:
J. GILLESPIE

FC NUMBER:
6006007929
DESIGNED BY:
J. GILLESPIE

CONSULTANT PROJECT NUMBER:
07306.16
R. ANWAR

REFERENCE NUMBER
APPROVED BY:

TCON12 TCON13

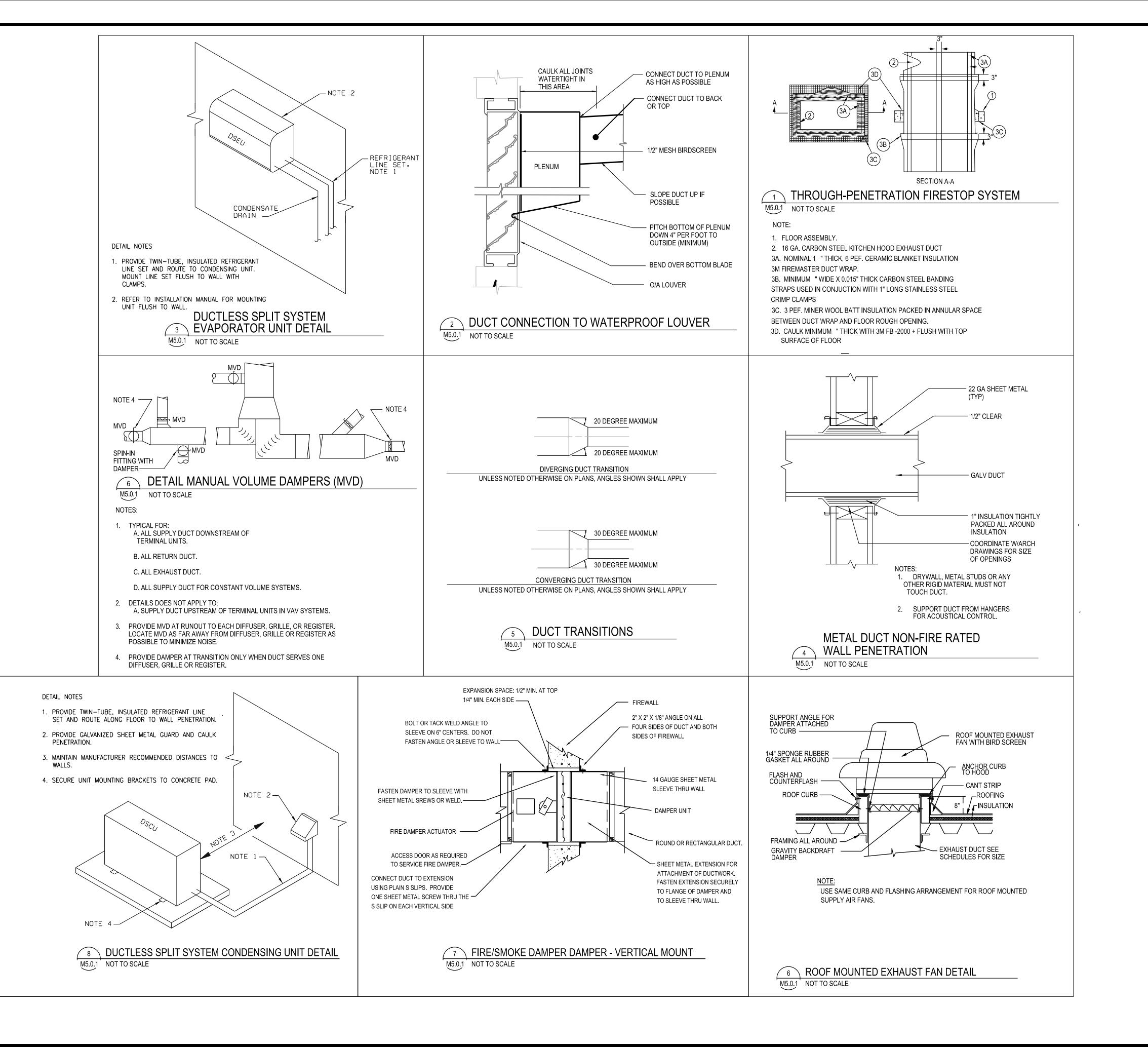
06.11.2014

SCALE:

1/8"=1'-0"

SHEET NO:

MT4.2.1





Hartsfield-Jackson Atlanta International Airport

HSST)

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ATLANTA, GA 30308
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FAX: 404.688.2400

44 BROAD STREET

PHASE 3
VERTICAL
TRANSPORTATION

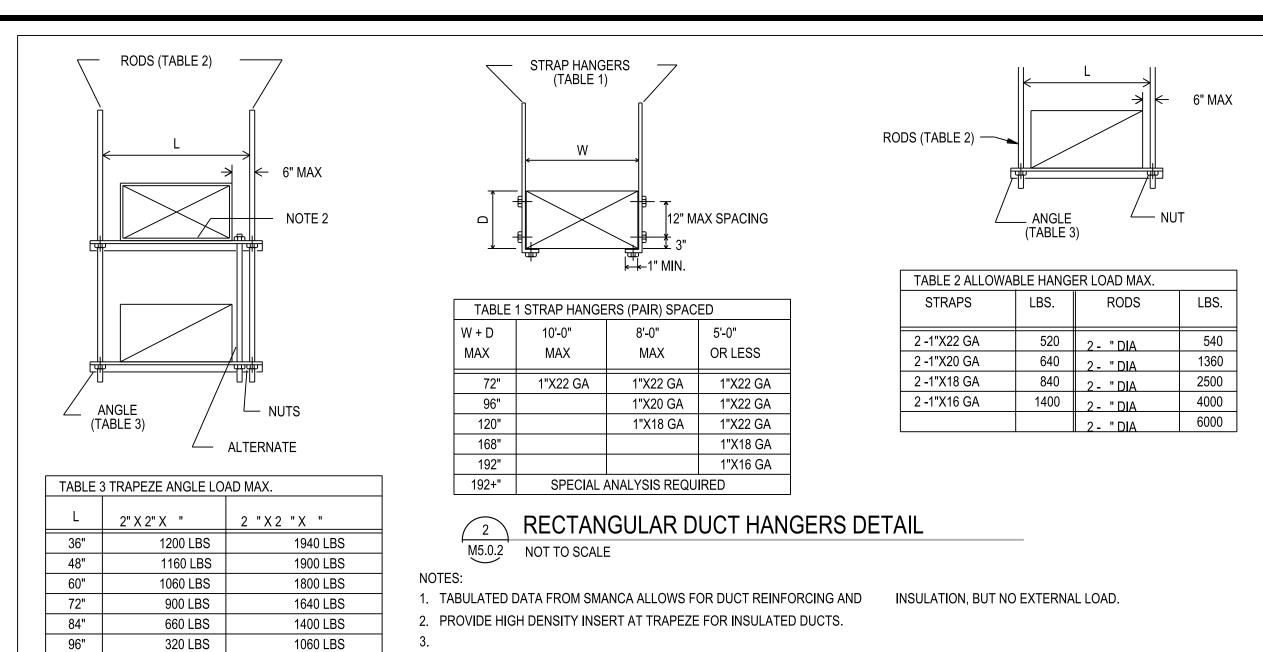
HARTSFIELD-JACKSON ATLANTA INTERNATIONAL

AIRPORT								
10.	DATE	BY	REVISION					
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MECHANICAL DETAILS

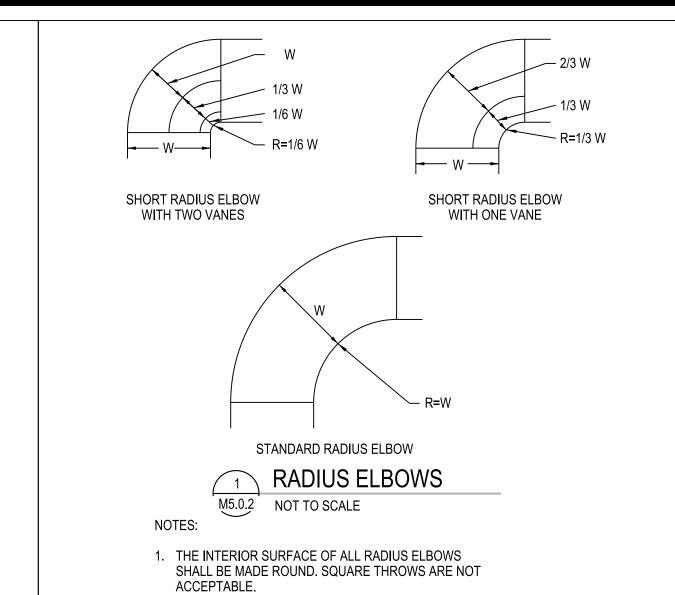
WBS NUMBER: H.03.90.202	<i>DRAWN BY:</i> J. GILLESPIE	
FC NUMBER: 6006007929	<i>DESIGNED BY:</i> J. GILLESPIE	
CONSULTANT PROJECT NUMBER: 07306.16	CHECKED BY: R. ANWAR	
REFERENCE NUMBER	<i>APPROVED BY:</i> J. GILLESPIE	
	DATE: 06.11.2014	
	SCALE: NONE	, נ נ
	SHEET NO:	

M5.0.1

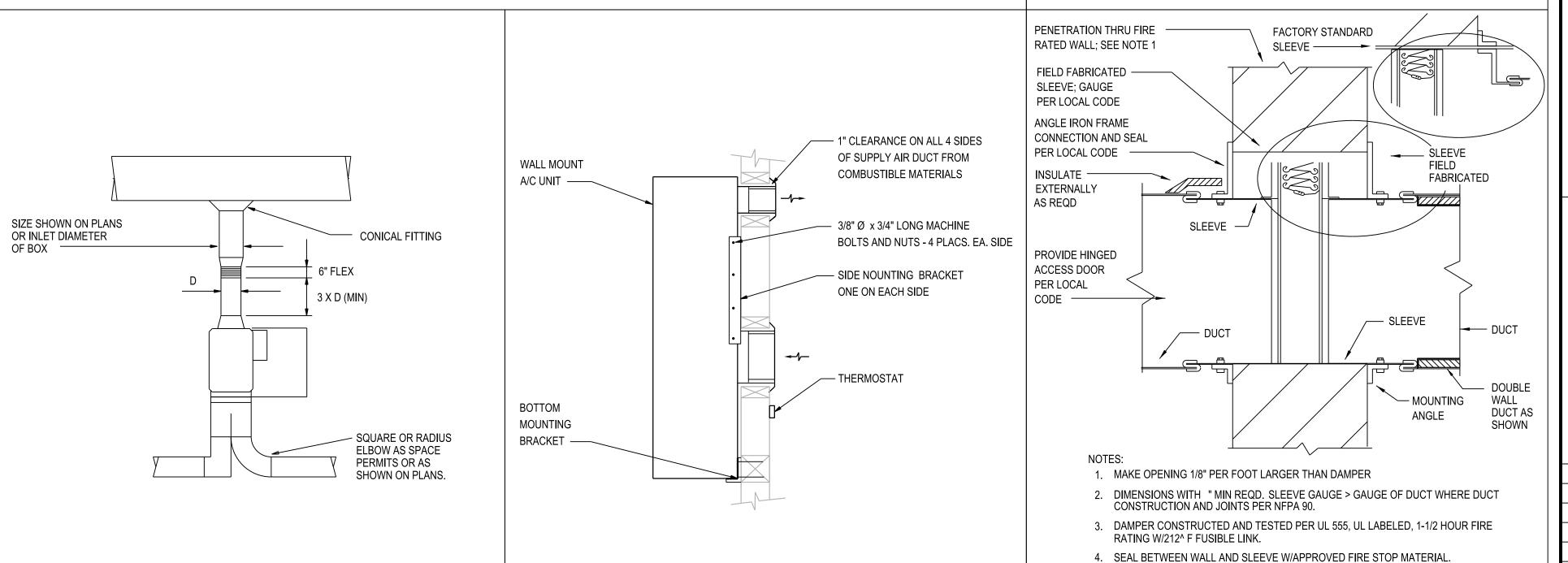


TERMINAL UNITS

TYPICAL FOR ALL TERMINAL UNITS -INCLUDES FPUs, VAVs, CVRs AND VVRs



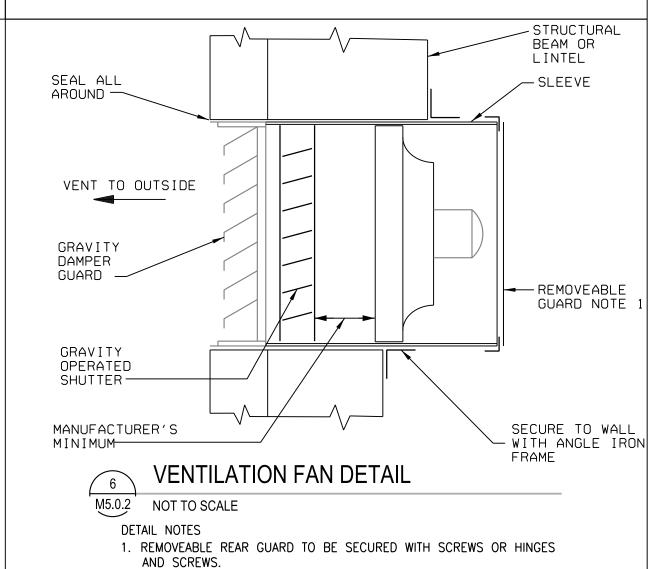
2. SHORT RADIUS ELBOWS WITH VANES MAY BE SUBSTITUTED FOR STANDARD RADIUS ELBOWS.



PAC UNIT DETAIL

M5.0.2 NOT TO SCALE

CURTAIN TYPE FIRE DAMPER NOT TO SCALE SEAL ALL AROUND -





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PHASE 3 **VERTICAL TRANSPORTATION**

HARTSFIELD-JACKSON ATLANTA INTERNATIONAL

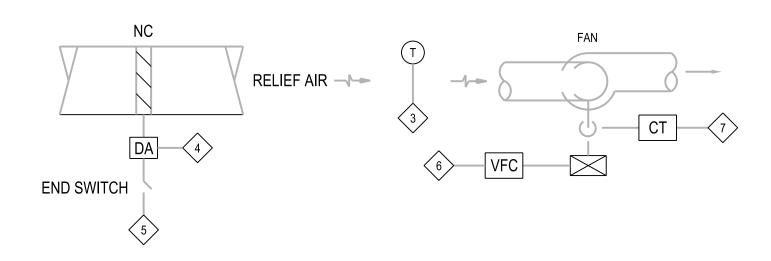
AIRPORT NO. DATE BY REVISION

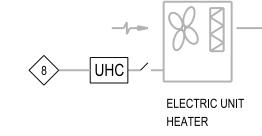
MECHANICAL **DETAILS**

WBS NUMBER: DRAWN BY: H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: 6006007929 J. GILLESPIE CONSULTANT PROJECT NUMBER CHECKED BY: 07306.16 R. ANWAR REFERENCE NUMBER APPROVED BY: J. GILLESPIE DATE: 06.11.2014 SCALE: NONE SHEET NO: M5.0.2

K:\07306.16 Vertical Transportation Phase 3_CADD\M5.0.2 MECH DETAILS.dwg

NO INTEGRATION OF ROOM
AIR CONDITIONERS OR
DUCTLESS SPLIT SYSTEMS
REQUIRED.





SPLIT SYSTEM OR ROOM AIR CONDITIONER WITH EXHAUST FAN CONTROL DIAGRAM

ELEVATOR ROOMS: A4, A5, A6, A7, A8, A10, B4, B7, B8, C5, D3, T10, AND T12.

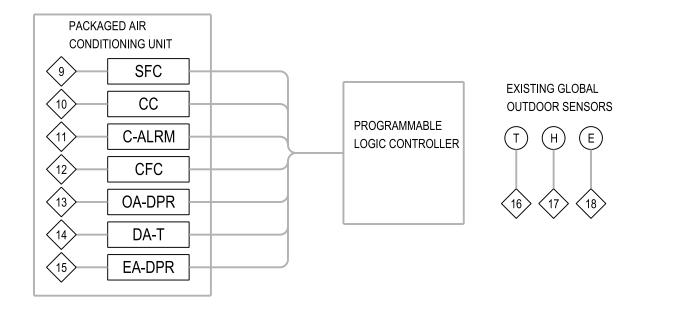
CONTROL SEQUENCE

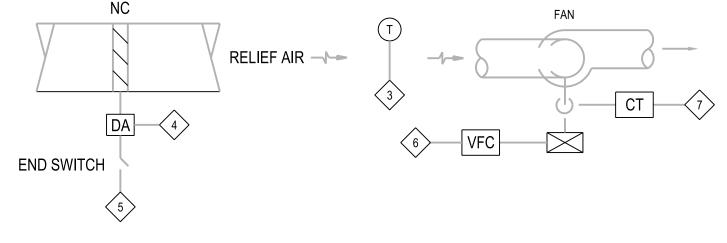
M5.0.3

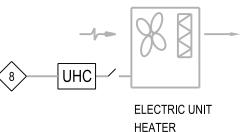
- 1. THE ROOM AIR CONDITIONING UNIT AND SPLIT SYSTEMS SHALL OPERATE BY SELF CONTAINED CONTROLS AND ARE NOT INTEFGRATED INTO THE BAS. PACKAGED THERMOSTATIC CONTROLS SHALL MAINTAIN 80°F ROOM TEMPERATURE.
- 2. THE TRANSFER FAN SHALL BE CONTROLLED WITH A HAND-OFF-AUTO SWITCH.

SCALE: NONE

- 3. UPON A TEMPERATURE RISE ABOVE 82°F (ADJUSTABLE) THE RELEIF AIR DAMPER ACTUATOR SHALL OPEN THE RELIEF AIR DAMPER. THE DAMPER END SWITCH SHALL SIGNAL THE BAS TO START THE FAN. AN ALARM SHALL BE ISSUED TO THE OPERATOR WORKSTATION THAT READS "EMERGENCY VENTILATION FAN IN OPERATION; PRIMARY COOLING REQUIRES IMMEDIATE MAINTENANCE."
- 4. WITH THE FAN ON AND A DROP IN TEMPERATURE BELOW 75°F (ADJUSTABLE), THE RELIEF AIR DAMPER SHALL CLOSE. UPON OPENING THE DAMPER END SWITCH, THE BAS SHALL COMMAND THE FAN TO STOP. THE FAN OPERATION ALARM SHALL CEASE.
- 5. A HIGH TEMPERATURE ALARM SHALL INITIATE ANYTIME UPON A TEMPERATURE RISE ABOVE 82°F (ADJUSTABLE). THIS ALARM SHALL CEASE ANYTIME THE TEMPERATURE IS BELOW 80F (ADJUSTABLE).
- 6. UPON A COMMAND FOR THE OPERATION OF THE VENTILATION, IF THE CURRENT TRANSDUCER DOES NOT SIGNAL PROOF OF CURRENT THE BAS SHALL SHALL ISSUE AND ALARM TO THE OPERATOR WORKSTATION THAT READS "EMERGENCY VENTILATION FAN FAILURE; NO COOLING AVAILABLE; IMMEDIATE MAINTENANCE REQUIRED." THIS ALARM SHALL CEASE UPON OPERATOR ACKNOWLEDGEMENT.
- 7. UPON A DROP BELOW 60°F (ADJUSTABLE), THE BAS SHALL SIGNAL THE UNIT HEATER TO TURN ON. UPON RISE ABOVE 65°F (ADJUSTABLE), THE BAS SHALL SIGNAL THE UNIT HEATER TO TURN OFF.
- 8. UPON A DROP BELOW 55°F (ADJUSTABLE), THE BAS SHALL ALARM TO THE OPERATOR WORKSTATION WITH A MESSAGE THAT READS "LOW TEMPERATURE ALARM; HEATING SYSTEM REQUIRES IMMEDIATE MAINTENANCE."







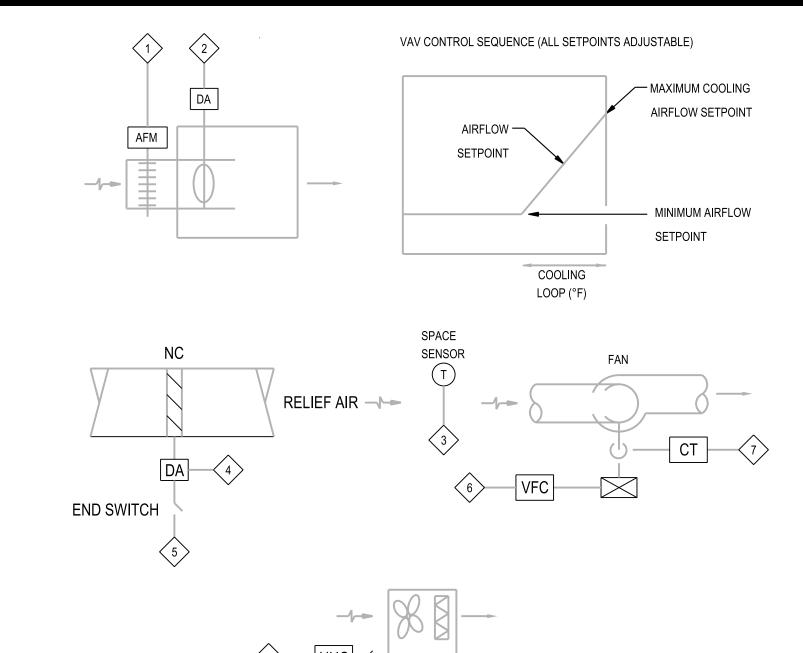
PAC UNIT WITH EXHAUST FAN CONTROL DIAGRAM

M5.0.3

E: NONE ELEVATOR ROOMS: D1, D2, TCON12, AND TCON13.

CONTROL SEQUENCE

- . WHEN THE CONDITIONS ARE NOT PRESENT FOR ECONOMIZER MODE, THE COMPRESSOR SHALL ENERGIZE ON-OFF IN STAGED OPERATION TO MAINTAIN A SPACE TEMPERATURE 80°F IN NORMAL MODE. THE SUPPLY FAN SHALL STAGE OPERATION IN UNISON WITH THE COMPRESSOR. THE CONDENSER FAN SHALL OPERATE WHILE COMPRESSOR IS OPERATING.
- 2. THE CONDITIONS REQUIRED FOR ECONOMIZER MODE ARE A TEMPERATURE BELOW 80°F AND AN ENTHALPY BELOW 28 BTU/LB.
- 3. UPON A CALL FOR FIRST STAGE COOLING DURING ECONOMIZER MODE THE OUTDOOR AND EXHAUST AIR DAMPERS SHALL MODULATE TO MAINTAIN 55°F AND THE COMPRESSOR SHALL REMAIN OFF. UPON A CALL FOR SECOND STAGE COOLING, THE COMPRESSOR SHALL OPERATE IN IT LOWEST STAGE AND THE OUTDOOR AIR AND EXHAUST AIR DAMPERS SHALL MODULATE TO MAINTAIN 55°F. THE STAGES IN COOLING SHALL RESPOND TO MAINTAIN A SPACE TEMPERATURE 80°F.
- 4. THE TRANSFER FAN SHALL BE CONTROLLED WITH A HAND-OFF-AUTO SWITCH.
- 5. UPON A TEMPERATURE RISE ABOVE 82°F (ADJUSTABLE) THE RELEIF AIR DAMPER ACTUATOR SHALL OPEN THE RELIEF AIR DAMPER. THE DAMPER END SWITCH SHALL SIGNAL THE BAS TO START THE FAN. AN ALARM SHALL BE ISSUED TO THE OPERATOR WORKSTATION THAT READS "EMERGENCY VENTILATION FAN IN OPERATION; PRIMARY COOLING REQUIRES IMMEDIATE MAINTENANCE."
- 6. WITH THE FAN ON AND A DROP IN TEMPERATURE BELOW 75°F (ADJUSTABLE), THE RELIEF AIR DAMPER SHALL CLOSE. UPON OPENING THE DAMPER END SWITCH, THE BAS SHALL COMMAND THE FAN TO STOP. THE FAN OPERATION ALARM SHALL CEASE.
- 7. A HIGH TEMPERATURE ALARM SHALL INITIATE ANYTIME UPON A TEMPERATURE RISE ABOVE 82°F (ADJUSTABLE). THIS ALARM SHALL CEASE ANYTIME THE TEMPERATURE IS BELOW 80F (ADJUSTABLE).
- 8. UPON A COMMAND FOR THE OPERATION OF THE VENTILATION, IF THE CURRENT TRANSDUCER DOES NOT SIGNAL PROOF OF CURRENT THE BAS SHALL ISSUE AND ALARM TO THE OPERATOR WORKSTATION THAT READS "EMERGENCY VENTILATION FAN FAILURE; NO COOLING AVAILABLE; IMMEDIATE MAINTENANCE REQUIRED." THIS ALARM SHALL CEASE UPON OPERATOR ACKNOWLEDGEMENT.
- 9. UPON A DROP BELOW 60°F (ADJUSTABLE), THE BAS SHALL SIGNAL THE UNIT HEATER TO TURN ON. UPON RISE ABOVE 65°F (ADJUSTABLE), THE BAS SHALL SIGNAL THE UNIT HEATER TO TURN OFF.
- 10. UPON A DROP BELOW 55°F (ADJUSTABLE), THE BAS SHALL ALARM TO THE OPERATOR WORKSTATION WITH A MESSAGE THAT READS "LOW TEMPERATURE ALARM; HEATING SYSTEM REQUIRES IMMEDIATE MAINTENANCE."
- 11. WHENEVER PACKAGED AIR CONDITIONING UNIT INTERNAL SAFTIES ISSUE AN ALARM, THE ALARM SHALL BE TRANSMITTED TO THE BAS.



SINGLE DUCT VAV TERMINAL UNIT WITH EXHAUST FAN CONTROL DIAGRAM

SCALE: NONE

ELEVATOR ROOMS: A1, B3, C6, T1, T4, T11, T13, T14, TCON1, TCON6, TCON7, AND TCON9.

CONTROL SEQUENCE

M5.0.3

- 1. VAV DAMPER ACTUATOR SHALL MODULATE TO MAINTAIN 80°F (ADJUSTABLE).
- 2. THE TRANSFER FAN SHALL BE CONTROLLED WITH A HAND-OFF-AUTO SWITCH.
- 3. UPON A TEMPERATURE RISE ABOVE 82°F (ADJUSTABLE) THE RELEIF AIR DAMPER ACTUATOR SHALL OPEN THE RELIEF AIR DAMPER. THE DAMPER END SWITCH SHALL SIGNAL THE BAS TO START THE FAN. AN ALARM SHALL BE ISSUED TO THE OPERATOR WORKSTATION THAT READS "EMERGENCY VENTILATION FAN IN OPERATION; PRIMARY COOLING REQUIRES IMMEDIATE MAINTENANCE."
- 4. WITH THE FAN ON AND A DROP IN TEMPERATURE BELOW 78°F (ADJUSTABLE), THE RELIEF AIR DAMPER SHALL CLOSE. UPON OPENING THE DAMPER
- A HIGH TEMPERATURE ALARM SHALL INITIATE ANYTIME UPON A TEMPERATURE RISE ABOVE 82°F (ADJUSTABLE). THIS ALARM SHALL CEASE ANYTIME THE TEMPERATURE IS BELOW 80F (ADJUSTABLE).
- 6. UPON A COMMAND FOR THE OPERATION OF THE VENTILATION, IF THE CURRENT TRANSDUCER DOES NOT SIGNAL PROOF OF CURRENT THE BAS SHALL SHALL ISSUE AND ALARM TO THE OPERATOR WORKSTATION THAT READS "EMERGENCY VENTILATION FAN FAILURE; NO COOLING AVAILABLE; IMMEDIATE MAINTENANCE REQUIRED." THIS ALARM SHALL CEASE UPON OPERATOR ACKNOWLEDGEMENT.
- 7. T14 ELEVATOR MACHINE ROOM SHALL BE SIMILAR, EXCEPT THAT A TWO POSITION VOLUME DAMPER IN THE LOW PRESSURE DUCTWORK SHALL BE UTILIZED INSTEAD OF A VAV TERMINAL UNIT.
- 8. UPON A DROP BELOW 60°F (ADJUSTABLE), THE BAS SHALL SIGNAL THE UNIT HEATER TO TURN ON. UPON RISE ABOVE 65°F (ADJUSTABLE), THE BAS SHALL SIGNAL THE UNIT HEATER TO TURN OFF.
- 9. UPON A DROP BELOW 55°F (ADJUSTABLE), THE BAS SHALL ALARM TO THE OPERATOR WORKSTATION WITH A MESSAGE THAT READS "LOW TEMPERATURE ALARM; HEATING SYSTEM REQUIRES IMMEDIATE MAINTENANCE."

DDC CONTROLS INPUT / OUTPUT TABLE		USER	T		INPUTS		OUTPUTS		
		GRAPICAL US INTERFACE	ALARM	STATUS	DIGITAL	ANALOG	DIGITAL	ANALOG	
ITEM #	TEM # DDC POINT			STA	DIG	₹	DIG	¥	NOTES
	SINGLE DUCT TERMINAL UNIT	X							
1	1 AIRFLOW STATION					Х		.,	
2	PRIMARY AIR DAMPER ACTUATOR ENTILATION FAN AND RELEIF DAMPER	Х		X				X	
3	ZONE TEMPERATURE SENSOR	Х				X			
4	RELIEF DAMPER ACTUATOR	X		Х				Х	
	5 RELIEF DAMPER END SWITCH			Х	Х				
6	6 VENTILATION FAN CONTROL			Х			Х		
7 CURRENT TRANSDUCER		Х	Х	Х		Х			
	ELECTRIC UNIT HEATER								
8 UNIT HEATER CONTROL				Х			Х		
	PACKAGED AIR CONDITIONING UNIT								
9	SUPPLY FAN CONTROL	Х		Х			Х		
10	COMPRESSOR CONTROL	Х		Х			Х		
11	COMPRESSOR ALARM	Х	Х		Х				
12	CONDENSER FAN CONTROL			Х			X		
13	OUTDOOR AIR DAMPER ACTUATOR	Х		Х				Х	
14						Х			
15	15 EXHAUST AIR DAMPER ACTUATOR			Х				Х	
16 OUTDOOR AIR TEMPERATURE SENSOR		Х				Х			UTILIZE GLOBAL EXISTING SENSOR
17	17 OUTDOOR AIR HUMIDITY SENSOR					Х			UTILIZE GLOBAL EXISTING SENSOR
18									UTILIZE GLOBAL CALCULATED VALUE
-	E001/01///EE01/00E			Х	Х				
- NORMAL MODE				Х	Х				



CITY OF ATLANTA, GEORGIA

Hartsfield-Jackson

Atlanta International Airport

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HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

NO.	DATE	BY	REVISION	

MECHANICAL DDC CONTROLS

WBS NUMBER: DRAWN BY: H.03.90.202 J. GILLESPIE FC NUMBER: DESIGNED BY: 6006007929 J. GILLESPIE ONSULTANT PROJECT NUMBEI CHECKED BY: 07306.16 REFERENCE NUMBER APPROVED BY: J. GILLESPIE 06.11.2014 SCALE: NONE SHEET NO:

M5.0.3